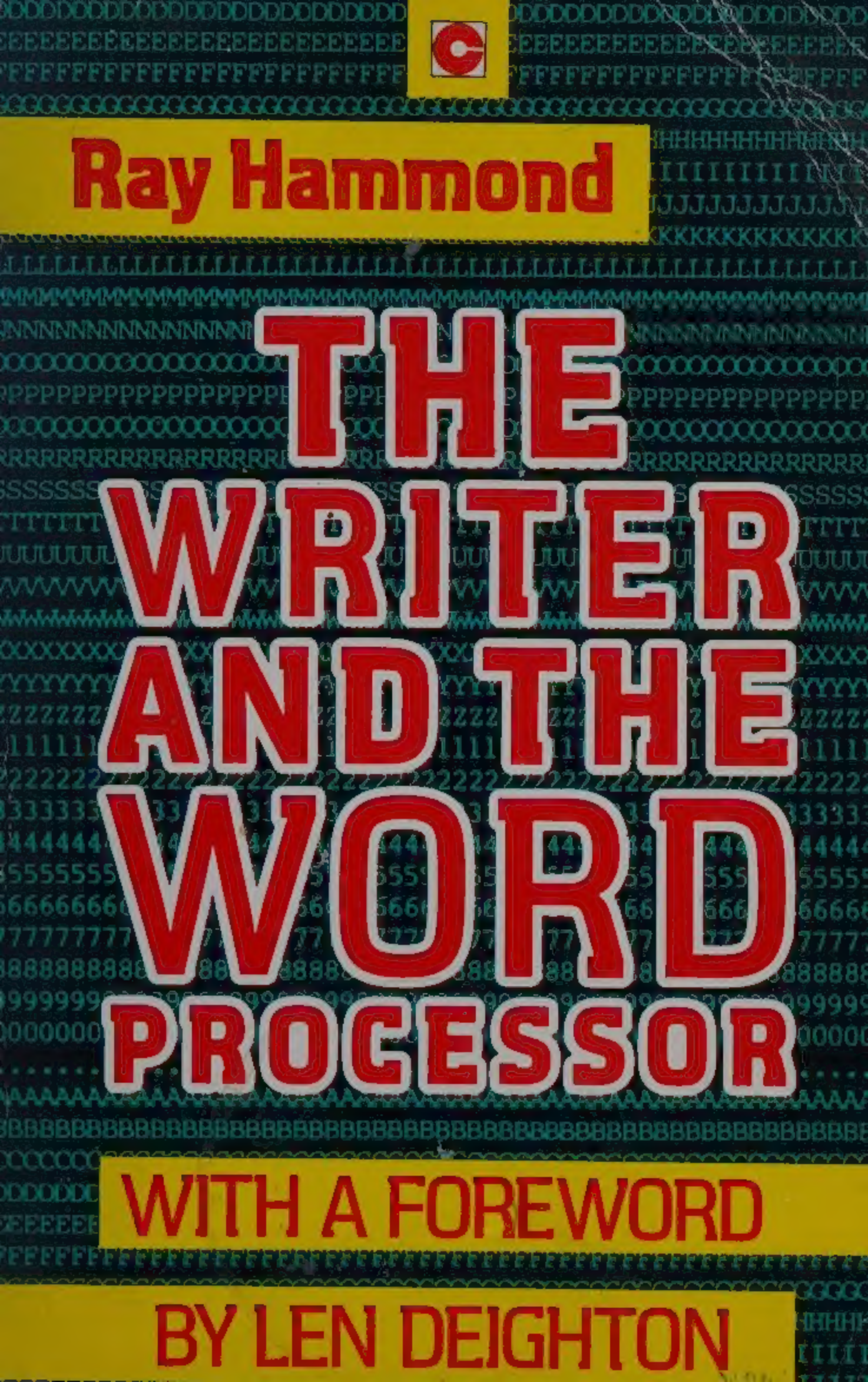
Ray Hammond
THE WRITER AND THE WORD PROCESSOR
WITH A FOREWORD
BY LEN DEIGHTON

THE WRITER AND THE WORD PROCESSOR

A Guide for Authors, Journalists, Poets and Playwrights

Ray Hammond

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Foreword

Only a couple of days ago I was enjoying lunch with a dozen other writers. I heard Harry Keating (the creator of the wonderful Inspector Ghote and his investigations) say, 'it used to be that when writers got together they talked about money: now they talk only about word processors.'

It's true. And why not? The changeover of working methods is traumatic and costly. Additionally there is always the chance that a far better – or at least a far more suitable – machine will come along as soon as the choice is made and paid for. And so writers are very concerned with the 'new technology'. The writing of books is quite different to the needs of the lawyers, debt collectors and public relations men for whom almost all w-p's are designed. Ray Hammond's excellent and carefully researched book provides the best guide I've seen to the whole vexed business of choice. It's not just a consumer guide. Mr Hammond explains the complicated and technical world of word processing in a way that anyone can understand. He covers a great deal of ground and will help you make up your mind whether or not to buy in the first place, for he provides plenty of telling quotes from writers who for various reasons resist these machines. Ray Hammond admits that there are many writers who will not enjoy or substantially benefit from changing their working methods. And he explains why.

Because the w-p must cater to such individual needs, everyone has different opinions. So I'd like to add my comments to Mr Hammond's most excellent book. I've told him that I think he's been a little hard on dedicated word processors and I'd like to say something in support of them. I use an Olivetti ETS 1010 which is a

very powerful machine. I found virtually no facility mentioned here (apart from the hard disk capability of certain machines) that my 1010 won't provide.

Some years back I bought a w-p (an Olivetti TES 501) from Richard Condon (author of the Manchurian Candidate etc etc) who'd already written a couple of books on it. This type of machine has no screen and Dick said, 'I didn't become a writer in order to spend all day in a dark room watching a TV screen.' Although he has now become a convert to the screen I still sympathise with anyone who rejects them. This type of machine – and even the 'memory typewriter' with disk drive – is a valuable tool for the writer who simply refuses to watch a TV screen all day. Take a look at the most sophisticated typewriters, this sort of machine might do everything you need. Also some typewriters can be expanded into full scale w-p machines by adding other parts. Although it must be remembered that a w-p using a typewriter as printer will always be rather slow when printing out.

But for anyone who wants an orthodox w-p the screen is of great importance. A high definition screen is a top priority, furthermore the screen must 'scroll' well ie move the lines up or down smoothly rather than jumping from place to place as lines do on some displays. My screen shows bold face and underlining exactly as they will appear on paper. (Ray Hammond says that such screens are rare but I wouldn't like to be deprived of this facility.) The chance to look at two documents simultaneously may sound like a luxury gimmick but this makes it very easy when you are moving text from one chapter to another.

It is useful to have 'headers': a line of type repeated on every page. On a typical header I include i) the date of this revise (date comes automatically by means of a built-in device). ii) the w-p reference so I can quickly find where and on which disk this chapter is to be found. iii) a page number. The machine will automatically renumber pages no matter how often extra pieces are inserted into the text or deleted from it. On the final draft I delete everything on the header except the page numbering. Similarly there is a device that automatically keeps a footnote on the same page as the reference to it no matter where text is inserted or deleted. Anyone who has wrestled with footnotes in a lengthy typescript will know what a relief that provides.

I actually enjoy sitting at my machine in a way I never enjoyed sitting at a typewriter or writing longhand. Regretfully I find that

lengthy sessions at the screen make me tired and my eyes become sore, so I limit my time and prepare carefully. I revise the typed script before editing on the machine rather than sit at the screen while doing that or other tasks, such as consulting reference. Some people are not affected by the screens and I envy them. In any case it might be worth putting an ultra-violet filter on your screen as I have done. I also have a sheet of red plastic to bring the colour of the screen away from the violet end of the spectrum.

The installation of the BOP (Brown Out and Power fail protection) in effect a permanent battery that prevents any chance of text loss due to power failure or due to someone kicking a floor plug as one of my children once did. Removing the fear of this happening takes a weight off the mind. Before that electricity supply failures frequently caused loss of text. On this machine it was a maximum of 16 lines and usually rather less. As a piece of text the loss didn't much matter; it was the most recent thing typed and remained in my mind. But when the power failure came in the middle of editing a chapter it meant that all the fiddling little corrections had to be located and done again. For me the installation of the BOP was vitally important and I strongly recommend it to any writer.

Unless you have a lot of power failures your chances of losing text are slight. Remembering the typescripts that – despite registration and express payment – have been lost in the mail without trace or compensation, I'm now reassured by the way that my machine can store complete texts until I get book proofs from the printer. There is no doubt that the post office will continue to lose more precious typescript each year than any number of word processing machines.

For writers anxious about the accidental erasure of text I have words of reassurance. On my machine, and many others, there is not only a 'cancel' key (which cancels a mistake) but also an 'undo' key which restores everything to what it was before I even contemplated the stupid decision. Ah, if only I had an undo button for all life's stupid decisions.

As a precaution against accidentally erasing a whole disk the machine warns twice before accepting the command. I'm not quite as cautious as Ray Hammond, who duplicates his disks twice a day. I duplicate each day's work at the end of the working day. It takes about three minutes. The machine will tell you how much space is still available on any disk – it's a good idea to check this each day – and will also warn you about a disk that is no longer in good condition.

I print out on an Olivetti PR 430 daisy wheel printer supplied with the w-p. It has an automatic sheet feed. I put a handful of A-4 paper on the chute and it feeds itself so that I can come back to a completely typed chapter. The printer is quite noisy so I start the printing when I'm off to have lunch or dinner in another room. This ASF printer is delicately adjusted, slow, large, heavy and rather noisy but the result is excellent for my purposes. On the other hand someone who wanted to put their machine in the back of their car and take it for a working weekend in the country would probably do better with a smaller, lighter, very fast dot matrix machine using tracking paper (with sprocket hole edges that can be removed by perforations). Now that there are so many very good matrix printers at low prices some writers are installing both types of printer: the quieter matrix for quick drafts and the daisy wheel for finished typescripts.

Is there nothing wrong with my w-p you may be asking. Yes, the program, like all the others I've seen, is not really suited to the task of writing a book. And what mentality of designer places a desk top machine's on-off switch at the back? And if the program is difficult the operating manual is impossible. This too seems to be a common failing of both w-p and memory typewriters. I was lulled into a false confidence by the superb manual of the Olivetti TES 501. I read it through twice and was working within three hours of first facing the keyboard. But be warned, writing operating manuals seems to be a task given to staff who are otherwise unoccupied.

Learn from an experienced operator if you get the chance, but remember that all such training is designed for office use and unless you want to know about the amazing world of 'spread sheets', financial projections and stock control, you might reel out of the classroom more bewildered than you went in. And you won't find it easy to make any instructor understand our particular problems because we are such a tiny section of the market that no one is very interested in us.

Be prepared to teach yourself as you go along. When you first get your machine use it for writing letters. These short 'documents' are easier to manage and if you get into difficulties you can abandon it and start again. My machine uses mini floppy disks each holding 360,000 characters. In practice I put about 100 pages on each in order to have plenty of room for additional text. I format my machine so that one page of my typescript is about equal to a page of the printed hardback book. This enables anyone interested to

calculate the size of the finished book. It also helps when looking at page proofs and trying to find the same passage in the typescript.

It is often said that the dedicated w-p is doomed to extinction. Even if this proves true it doesn't change the fact that the dedicated machine is designed to do all the things we need to produce those very lengthy 'documents' that we call books.

One often-expressed fear should be quashed. There has been talk of floppy disks being delivered to publishers, edited, printed and made into books without ever being typed on paper. This would require an act of faith in authorship that no publisher is likely to make. Publishers and their editors will, into the foreseeable future, read and mark up typewritten paper. No one would want to read a whole book on a screen. And as to what happens after that, everything suggests that the writer's control over the editing of his own work is likely to increase rather than decrease. Predictions in the development of electronics are hazardous, but right now it's far cheaper to get an author to incorporate editorial changes using his own w-p than to go to the trouble of transfer to other software in order to modify texts in the publishing house.

Most writers seem to find the w-p provides a chance for them to do better work while lessening the drudgery. But it does mean a change in working methods. Fleeting ideas can be put down on paper without worrying too much about typing errors, spelling or other keyboard troubles. Roughly typed pages can then be organised, improved and corrected on the screen. And then improved again tomorrow morning. But this does encourage the w-p owner to produce very rough first drafts. No problem arises until you are forced to work on an old fashioned typewriter again. Be warned, it's hard to kick the habit.

Len Deighton.
Ireland. July 1984.

Preface

This book would have been entitled 'The Writer and The Computer' were it not for the fact that most writers are aware of 'word processors' but unaware of the many other ways in which a computer can be of help. Computers have a terrible image, one which at best bores writers and at worst terrifies them. The computer is seen either as a machine which carries out complex calculations or as a games-playing opiate which occupies moronic adolescents. Computers are both of these things, of course, as by their definition they are universal machines, but they are also capable of offering incredible assistance to the writer.

Some writers have already discovered how powerful the computer is and have already harnessed it to their needs, but many more instinctively react against technology, hearing in phrases such as 'word processing' and 'information retrieval' overtones of uniformity and sterility, which seem inherently opposed to creativity. This is a mistaken view which is usually based on uninformed prejudice.

This book is for writers and those who wish to write and who are sufficiently open-minded to explore computer potential. The computer is the most powerful tool ever developed for writers, offering greater control over words, increased production and superb research capabilities. *No computer knowledge is required* to use computer aid in writing.

Many writers choose to work in longhand, shunning the typewriter as a difficult mechanical tool. Without experience of computers they might be forgiven for thinking that word processing is simply an extension of the typewriter and, as such, still alien to

their way of working. This is not the case. The typewriter is a desperately limited tool which is rightly ignored by many writers. It is totally linear in operation, frustrating the writer's attempts to mould a piece of writing as a whole. Writing with computer aid is much closer to working with pencil and paper than to working with a typewriter. Word processing programs provide even more freedom than the pencil and paper combination and make it possible for writers to keep the whole 'fluid', in a state open to continual alteration.

It does not matter if you cannot type, the computer can teach you to do that very quickly and much more efficiently than is possible with older methods. It is a major upheaval for any writer who changes writing methods and it can have a profound effect on his or her work. Many successful writers refuse to contemplate a switch to working on a computer simply because they *are* successful and cannot conceive that computer aid could do anything to improve their work. They also harbour the fear that tampering with the status quo could have a damaging effect.

The next generation of writers will create words with computer aid as naturally as we pick up a pencil For those prepared to invest the time and effort to learn about new technology, many of the advantages that in future will be taken for granted can be theirs today.

Ray Hammond

About the author

Ray Hammond is a professional writer who writes both fiction and non-fiction. His interest in computing has led him to write several books on the subject and these include the best-selling book 'Computers and Your Child' (Century) which is now in its second edition.

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Writers and Ways

Georges Simenon was unable to work without having twelve ready-sharpened pencils beside his pad. Hemingway always stood when he wrote. Norman Mailer likes to gaze out at long views and Lawrence Durrell works in a room with no windows.

After 'Where do you get your ideas from?', the favourite question asked of writers is 'How do you write?'

Until now method has been unimportant, irrelevant to anybody except the writer concerned. Writers know that it matters not how you write but *what* you write. Details of favourite typewriter, working hours and preferred stimulants shed no light on the mysteries of the creative process.

Now it *does* matter how you write; the inexpensive computer has arrived in our lives and it brings immense benefits to writers – at least to those who are not too prejudiced or habit-bound to seize them.

The computer has the power to affect profoundly the way every writer works, not merely by automating typing or improving editing facilities, but by removing a major barrier that stands between writers and their words: the labour of getting words onto paper. As a result of this freedom new creative possibilities are opened up.

Some writers feel that for a book to be any good it must have been produced in pain and some even go so far as to extend this concept to include the drudgery of re-typing; for example, Jeffrey Archer (in an interview in the *Scotsman*, 9th December 1983) says he re-wrote *Kane and Abel* fifteen times before he was satisfied with it and he would never use a computer to cut short this process.

The computer can help all writers – authors, dramatists, journalists, etc. – in several important ways. The use of a word processing program automates the production of words. Writing is broken down into its component parts; composition, editing and printing. Manual methods of writing – longhand or typing – force decisions about these elements to be made simultaneously.

With a computer each part of the writing process can be considered separately. One of the most frustrating parts of writing is trying to find the right opening sentence or paragraph and success or failure in this has a tremendous effect on what follows. Joseph Heller bases all his work on what flows from an opening sentence and Gore Vidal says that the first sentence is 'all important'.

Now the computer allows the writer to postpone the moment when the opening sentence has to be perfect: ideas can flow forth in the knowledge that the writer can go back to the start of the piece at any time and tinker with the opening. If the construction cannot be made right at one session, the knowledge that it can be worked again at the next (without the necessity of re-drafting) is very comforting.

Editing becomes an endless pleasure when the computer takes on the chore of creating clean copy. This freedom is something that writers can savour afresh every working day; the joy of being able to consider the construction of every sentence, the use of individual words and the chronology of plot or thought development. No matter how diligent, the writer who produces words manually cannot have the same opportunity to hone and polish.

The printing process is of less interest to writers, unless they have a strong visual sense, but the computer offers considerable control over printing and can produce any script or manuscript in an endless variety of formats.

The computer saves an enormous amount of time. Most writers who use a computer report increases in productivity of between 100 and 400 per cent.

The computer is also extremely useful for research purposes. When coupled to the telephone it is able to search large files of electronic information (even if they are thousands of miles away) and retrieve, select and sort information in ways that are impossible manually. It is the most powerful research tool available to a writer.

There may be some disadvantages to the computer's use. Some writers report that the ease with which they can develop words on

the screen encourages over-writing and fosters a 'sloppy' attitude which does not exist when a writer has to pre-consider every word which is to be hand-written or typed. Other writers feel that computer aid prompts them to do too much editing. This might appear to be a contradiction of the point about over-writing, but the editing power of the computer is considerable and the freedom to edit and re-edit without having to produce new drafts may tempt some writers to over-edit and to produce writing which is so 'considered' that spontaneity is lost.

It is possible that the computer will increase publishers' control. Because computer word processing is likely to become the most common method of manuscript preparation during the next decade publishers will buy equipment which will allow them to edit 'electronic manuscripts' in-house. Unlike a paper manuscript, publishers' editors will be able to alter authors' work 'invisibly', i.e. in a way that may not be obvious to the author. Even if every correction is agreed with the author, the editor's ability to alter words when a manuscript is provided in electronic form is considerably enhanced and some writers feel that this is a dangerous development.

It is clear to most of those who have used a computer as an aid to writing that the benefits the technology has to offer outweigh the potential disadvantages. Care must be taken to avoid the problems mentioned (and others as they appear) but as the price of computer technology falls, nearly all writers who choose to do so will be able to computerize their writing techniques.

For those who are complete novices in computing several commonly-held misconceptions must be corrected. The computer has no power to write words. It cannot aid the development of thought in any way other than in helping with its organisation. A computer which can generate an intelligent sentence on its own is still too far in the future to be contemplated (and, indeed, an irrelevance). Writers need *no* knowledge of mathematics or programming to use a computer for their writing, indeed, no special knowledge is needed. A computer is *not* merely an automated typewriter – it is far, far more than that.

About forty per cent of professional American writers and about fifteen per cent of their British counterparts are now using computers and word processing programs to prepare manuscripts and scripts. The main reason for the greater acceptance of computer aid by US writers is that word processing has been heavily promoted

in America as a writer's tool: Robert Ludlum advertises the Atari computer system and magazines such as *Time* have carried major features about well-known writers and their word processors.

In California, and in Hollywood in particular, computer aid is now almost mandatory for writers. Those who have had some experience of working in Hollywood know how ready writers have to be to cut and alter scripts! Word processing was made for this climate, but it may prove counter-productive if producers and directors are encouraged to order even more changes in the knowledge that little fresh labour is involved. There is even a Hollywood produced magazine dedicated especially to the needs of writers who use word processing.

WPnews is a magazine concerned with the writer's view of word processing. It is published six times a year and carries interviews with writers about their computing experiences, reviews of relevant computers and programs and information to assist writers to get the most from new technology.

WPnews is available from:
Word of Mouth Enterprises,
211, E. Olive Avenue,
Suite 210,
Burbank,
California,
CA 91501,
USA
US and Canada subscription: $24
Overseas subscription: $36.

Despite the benefits the computer has to offer, many writers, especially the more established 'literary' authors, do not regard it as a suitable or appropriate tool for their work. Many of these writers have formed an opinion in ignorance of what the computer is and what it has to offer. In the preparation of this book I canvassed the views of many writers on the subject of computing and word processing. I discovered a strong hard-core reaction against computer technology among a substantial minority of writers. This minority, perhaps surprisingly, is made up principally of the more successful writers, those more able to afford technologi-

cal assistance. Not surprisingly, the majority of 'disbelievers' were novelists.

For many, this rejection of the idea of computer aid is almost a gut reaction, an instinctive feeling that if good writing can't be produced with traditional writing tools it can't be produced at all and if it can be produced with a pencil or typewriter, who needs a computer? Such common reactions miss the point and most writers forget their prejudice and change their mind when they are properly introduced to computer help.

Artist and writer Ralph Steadman is typical of this minority. In December 1983, shortly after the publication of *I, Leonardo*, his book of pictures and prose, he told the *Scotsman* that he would never use a computer and stated:

'I am sure that Leonardo would, like me, have been a reactionary. He would have looked in terror at the way our world is being taken over by the chip.'

A month later Steadman went out and bought a microcomputer and a word processing program. This was not hypocrisy on his part, but a genuine change of opinion, prompted by the need to get to grips with three trestle tables covered with the work of twenty years, and a close examination of what the computer could do to help him bring order to this chaos. He had decided to write a musical and discovered how much the computer could help him.

Some feelings go far deeper than just a reaction against new technology. There is a proportion of writers for whom all machines seem to be a barrier to creation. Iris Murdoch's views express this feeling well:

'I do not go near a word processor, or even a typewriter. I cannot imagine how thinking can take place on these awkward machines. There is no substitute for ink and I do not even like biros – but that is another question. For real *thinking*, as in philosophy or writing a poem or novel, one must use a notebook or paper which can be turned over, a pen which scratches out, opposite pages on which variants can be placed and so on. It must be apt and ready for the eye; easily accessible.

'Typing proceeds *forward* in such a way that turning back to alter something is difficult (and a lazy thinker won't bother) and working additions in longhand destroy the visual continuity of the text much more than marginal additions in a hand written text.

'The word processor is, of course, tidy but what is the equivalent of turning back to correct a section ten pages back in the notebook?

A word processor needs "clues" to turn back. One would have to spend time programming it so as to make it more simple. Why not use one's whole mind in the old way, with pens, paper, notebooks, etc. instead of dazzling one's eyes staring at a glass square which separates one from one's thoughts and gives them a premature air of completeness? People can no doubt become very skilled with these machines, but I think it's all going in the wrong direction.'

Although it is possible to detect an underlying reaction against technology in Iris Murdoch's view about computers and word processors she raises some very serious points which will undoubtedly find sympathy with many writers. It is the purpose of this book to try to answer some of these points, and others which may be raised. Writing is a difficult occupation and it must be stated that the computer does not make the composition of dialogue, plot or storyline any easier. It merely offers assistance in getting the words onto paper (or any other medium). Whether the computer/word processor is a barrier to thinking, and therefore writing, is a question that is the central, underlying theme of this book.

Iris Murdoch's views are fairly typical of many novelists. Fay Weldon:

'I don't type and I choose to believe that there is some kind of mystic connection between the brain and the actual act of writing in longhand. They (word processors) seem editors' toys rather than writers' and increasing the power of the editor is the last thing the writer wants.'

Kingsley Amis:

'My experience with the word processor turned out to be entirely negative, and straight away too. So far I have found my mind, my typewriter and the Oxford Dictionary to be entirely adequate for my needs. The only thing which will improve my writing is more talent, which as we know comes only from God.'

Some writers reject the idea while advancing alternatives. Frederick Forsyth:

'I have never had a word processor, nor have I any intention of having one. I have seen one in operation. It appears to me an excellent aid to editing, rather than to writing. It also appears to be superb in the production of faultless fair copy, or as a retrieval mechanism, not to mention a reference index. But for the money, I'd prefer a nice typist. At least they can make the coffee.'

It will be some years before computer aid for writing is generally

accepted, particularly among the writers of the literary establishment. But the next generation of writers will think rather differently. The implications of *learning* to write with automated facilities are very far-reaching. Writing in *New Horizons in Educational Computing* (Ellis Horwood, 1984) Canadian educational psychologist J. Dale Burnett says:

'An important feature of such systems (word processing) is their openness to revision, with a minimum of effort. It would be a mistake to focus on the product from such a system and fail to recognize the attitude of the author as he prepared his first draft, an attitude that encompassed the realization that future modification would be relatively easy. What is the impact of such an awareness on writing style, or "writers' block", on creativity and on overall structure? What is the impact on elementary school children when asked to write a short story? What is the effect on a young child of a "professionally typed" story as compared to a hand-printed one? Perhaps documents will cease to be viewed as "final products suitable for grading" but as dynamic entities capable of continual refinement, based in part on constructive feedback from others, including teachers, and in part on the changing moods and personal growth of the individual' (*New Horizons in Educational Computing* edited by Mazoud Yazdani. Ellis Horwood, 1984).

The ability to revise endlessly and effortlessly is probably the benefit most noticeable when writers first start to use a computer for word processing. Len Deighton feels that fatigue and apparently trivial barriers such as an over-full sheet of paper stopped him from achieving his best possible performance until he used a computer as a writing tool.

Discussing his work before the invention of word processing, Gore Vidal made his needs clear:

'For me the main pleasure is being able to afford as many completely retyped rough drafts as I like. When I was young and poor I had to do my own typing, so I seldom did more than two drafts. Now I go through four, five, six. The more the better, since my style is very much one of afterthought' (*Writers at Work*, 5th series, edited by George Plimpton. Penguin, 1981).

Most writers edit and revise many times before they are satisfied with a manuscript. There is a minority tradition which despises correction, of course, and this is probably best typified by Steinbeck, whose prose was never re-read let alone re-written. Other writers choose to dictate, Henry James and Barbara Cartland

are uneasily paired examples of this genre, but considerable criticism is levelled at the self-indulgent and rambling prose this method can produce. It is felt by some that computer aid might lead to a similar level of self-indulgence and Tom Sharpe, whose love/hate relationship with a computer is described in Chapter 12, feels instinctively that there's something wrong with working with word processing: he feels it's 'too easy', it can't be right.

Such feelings can be seen as expressions of unease as we try to come to terms with a new species of intelligence in the world. As yet this intelligence is very limited, but our nervousness is exhibited in many areas of society. In some the computer revolution is having a disastrous effect, but even when machine intelligence promises only benefits we are uncertain of our feelings towards it.

That writers need help is obvious. Henry Miller's method of working is one many writers share:

'When I'm revising, I use a pen and ink to make changes, cross out, insert. The manuscript looks wonderful afterwards, like a Balzac. Then I retype, and in the process of retyping I make more changes. I prefer to retype everything myself, because even when I think I've made all the changes I want, the mere mechanical business of touching the keys sharpens my thoughts, and I find myself revising while doing the finished thing' (*Writers at Work*, 2nd series, edited by George Plimpton. Viking Press, 1963).

The word processing computer might have been specifically built for Miller and writers who work similarly. In fact, it was developed for the commercial needs of large corporations, and many manufacturers have still to realise the scope and value of the literary market for equipment.

Many writers have seized the computer and have become fervent advocates of its power to assist. Len Deighton was the first well-known writer to use word processing when he leased a large IBM machine in 1967. Despite the appearance of many newspaper and magazine articles in which Deighton praised the power of the computer, very few other writers harnessed its power until the microcomputer appeared ten years later. Many writers were then seduced into buying special computers described as 'Word Processors' made for office use, but these were over-priced and limited to one function.

The list of well-known writers (and those who write) using computers is long and includes such diverse talents as Dorothy Dunnett, Isaac Asimov, Clare Francis, Ernest Herbert, Arthur

C. Clarke, John Hersey, Harry Harrison, Jimmy Carter, Denis Norden, Irving Wallace, Tom Sharpe, Stanley Elkin, Richard Condon, Harold Pinter, Racquel Welch, Alvin Toffler, Michael Crichton, Ralph Steadman, Terence Feely, Frank Muir, Stanley Elkin, Gene Roddenberry (of course), Stephen King, Bo Derek and many, many more.

There is an equally long list of those who refuse to examine the concept and this includes more 'literary' names. I suspect the reason for this may be partly because many successful writers are creatures of habit who dislike the idea of any change occurring in their working pattern, and because the computer has an extremely technological image: art and computing seem to be mutually exclusive concepts.

Len Deighton has a theory about why successful writers are reluctant to examine alternative ways of working:

'I've come across quite a lot of Luddite reaction on the subject. In the journal of the American Authors' Guild there was some correspondence that was so comical: some guy wrote a piece saying how useful he had found word processing and in the course of saying this he mentioned how useful it was to do magazine articles. The response from a lot of writers was: "Well, of course, this is all right for journalists, but serious writers don't want it."

'There's a lack of self confidence in all writers, they're afraid they'll dry up and this stops many established writers from changing their tried and tested methods of writing.'

Future generations will, if they bother to look back, smile at our antics as we struggle to come to terms with technology. But in the meantime it is my hope that the spelling out of the considerable benefits the computer has to offer will persuade more writers to examine its possibilities.

The computer offers word processing; the ability to manipulate words. Other associated features with this ability include automatic lexicons which check, and in some cases correct, typing and spelling, programs which make some attempt at checking grammar and automatic thesaurus programs which provide the writer with an immediate list of antonyms and synonyms on screen.

The computer offers the writer the power to search the world's libraries from a telephone anywhere in the world. The information discovered can be 'down loaded' (i.e. transferred) into the writer's own electronic storage system. Other information sources which may be tapped by the computer include specialist 'databases' (i.e.

computerized files) of a wide variety of subjects including history, news, chemistry, agriculture, sport, etc.

The computer offers the ability to store information in a form which allows the writer to manipulate it in ways which would be impossible by other means. Some novelists are now building their own databases around characters and locations in novels. This provides them with instant access to continuity information and this facility is especially helpful in the writing of long works.

Computer programmers have started working on finding other additional ways for the computer to help. New programs described as 'thought processors' are becoming available and these are programs which help writers to prepare and organise their thoughts before writing actually starts. Although of less direct use than word processing programs, these programs can be helpful when a detailed non-fiction work is being prepared and they turn the computer into an intelligent notebook capable of sorting and cross-referencing ideas and thoughts.

Tiny, battery-powered, word processing computers are now available which allow a writer to work anywhere, independent of mains power. These computers typically weigh about four pounds and they are becoming treasured companions for those writers who are taking advantage of new technology.

It is possible to buy a complete computer system capable of offering word processing and other benefits for under £1,000/ $1,500, but the purchaser would need some computer knowledge to assemble a worthwhile system inside this budget. A more realistic figure for writers who are computer novices would be £2,500/$4,000 and although this is a considerable amount of money for most writers, I believe that the benefits available are so great that those whose imagination is not manacled by technology cannot afford not to make the investment.

2

The Hard Work: Finding Out About the Hardware

WARNING: Deciding to buy a computer (or a 'word processor') is not a simple matter. If you are like most writers you will agonise over deciding about which computer to buy and which programs to choose and you will make life hell for salespeople and friends who have already taken the plunge. That is how it should be. Investing in a computer to help with writing is a *major* step which is totally unlike small changes such as switching typewriters or even moving office. You must expect to lose *weeks of work* during the transition. The research into the best system for your needs is likely to take a week if you do the job properly and the purchase and installation will take another. Following the arrival of the computer in your office you will then face a few weeks in which your writing will be totally disrupted as you try to get the thing working and get used to it.

Introducing a computer into a writer's routine is very similar to introducing a computer into an accounts office, a factory or anywhere else. It is difficult and things always go wrong. I hope that the information contained in this book will be sufficient to convince you that this investment is worth making, but although almost every writer who has installed a computer for work purposes enthuses about its power to help, they all have horror stories to tell about the first few weeks. You have been warned.

It is hoped that some of the information contained in this and the following chapters will help you to avoid the worst mistakes that can be made when writers start using computers.

A 'dedicated' word processor or a micro?

This is the first choice writers have to make. All computers can act as word processors, but not all word processors can act as computers. If you choose a dedicated word processor you *may* not be able to use it as a normal computer for researching and data storage (or for playing games!). On the other hand if you're *really* frightened of machines and you have the money, a dedicated word processor might be the right choice.

'Dedicated' word processors are produced by the big office equipment manufacturers such as Philips, Wang, Olivetti, AES, Xerox, etc., and they're designed to sell to the executives of large corporations: banks, oil companies, insurance companies and so on (note: most word processors are sold to men by men although they are used ninety-eight per cent of the time by women. The men who make the purchasing decisions almost never use them).

A dedicated word processor is *slightly* easier to use than a microcomputer with a word processing program, but a microcomputer system for word processing can be purchased for around £2,000/$3,000 and the cheapest dedicated word processor is likely to cost at least £5,000/$7,500. What you get for that extra money is a keyboard that is configured as closely as possible to a typewriter layout but which has a collection of 'special' keys marked with such names as 'cut' and 'paste' which are used exclusively for cutting a block of text from one position in a document and moving it to another. It is easier to visualise the actions of moving text when presented this way. Dedicated word processors are also bulky enough to convince the company accountants that the money has been well-spent but the main drawback is likely to be the machine's inflexibility: it will probably be very good for word processing but unable to do anything else.

It is frequently claimed that dedicated word processors have more power or more facilities than a microcomputer running a word processing program; this is not true: *a modern micro with a good word processing program is now as good as, if not better than, a dedicated word processor.*

Many of the more expensive microcomputer word processing programs have all of the features that can be found in dedicated word processing systems and offer considerably more flexibility. If you can afford it, and if you consider yourself so untechnical that you decide to play safe and buy a dedicated word processor, your money should buy you far more 'hand-holding' from the suppliers.

You should get the attendance of a training officer in your 'den' (as did Dorothy Dunnett – see Chapter 12) and your extra money should secure you a telephone 'hot-line' down which you can shout if you get into a problem. You should also get better after-sales service – you will, after all, be paying an extra few thousand for it!

Len Deighton, one of the authors most experienced in word processing, disagrees:

'I know that dedicated word processors are on the way out, but I believe that it is the right answer for many authors. I wasn't a computer buff when I first got into word processing, I'm not much of one now, and I think writers are the sort of people who need the maximum help from a machine and the suppliers.'

The things that a dedicated word processor *cannot* do should really be the deciding factor for all but the most technically timid. Most of them can do nothing besides word processing. Some are offered with scope to do some accounting procedures, but most of them are microcomputers especially adapted (which usually means truncated) so that 'office girls' will be able to use them with the minimum of training. This means that much of the power of the computer for doing other things – tax returns, linking into phone lines for research, playing games, etc. – will be denied to users of a dedicated system. If this doesn't dissuade you from the idea of buying a dedicated machine nothing will and you should probably stop reading now, ring up the nearest big-name equipment dealer and write out your cheque. Your hand will be held all the way.

As an aside - a couple of years ago I received a panic phone call from a girl friend who worked in a large London advertising agency. The company had been threatening to introduce 'new technology' for months, and after agreement had been reached with all the unions concerned she found herself landed with a brand-new white-cased word processor and whisked away to the country for a week's training course. The phone call to me came two weeks after she'd got back to her office. When I arrived at the office – during the lunch break so that her boss wouldn't know what was going on – I found that she had cajoled the stockroom manager into letting her have her old typewriter back and she was hiding it in the bottom drawer of one of her filing cabinets. She had put up

with a couple of weeks of pretending she knew how to operate the word processor while she had been extracting her faithful old typewriter from the drawer and banging out the letters and reports mechanically as soon as her unsympathetic boss was out of the way. When I sat down to have a look at the word processor I was appalled to find that it was one of the most 'unfriendly' systems I've ever come across, of either the microcomputer-based or the dedicated variety. Even after several years of word processing experience it would have given me problems. The poor girl did manage to get the system working in a superficial way, but I understand that the experiment in that agency was considered a failure and the new technology that their clients see is all for show. Most secretaries have an electric typewriter as well.

The parts of a computer system

Assuming you haven't written your cheque out to Philips or Wang, you now have to do some learning: this is where the hard work starts. Apart from the financial saving, making the investment of taking in knowledge about computing is something that will repay you over and over again as society hands over more and more responsibility to intelligent machinery. Also, the computer's power to help writers is constantly expanding and only those who have a working knowledge of computing (as against a technical or theoretical knowledge) will be able to take full advantage of the assistance available.

A computer system suitable for writers consists of the following elements:

1) the central processing unit (the computer itself)
2) an input device (the keyboard)
3) two output devices (a screen, so you can see what you're typing and a printer to provide typed copy)
4) the word processing program (discussed in next chapter)
5) a memory storage system for holding the word processing program and getting it into the machine and for storing information – i.e. work in hand

There are extras which can be added to this list if you decide to take full advantage of the computer's power:

6) a 'modem' – for connecting your computer to the phone lines for research (not normally available on 'dedicated' word processors)
7) a 'database' filing system to store the results of your research
8) a 'cut-sheet' feeder which will automatically feed separate sheets into a printer
9) additional programs such as typing tutors, automatic spelling checkers or grammar checkers.

The Central Processing Unit – the CPU

The CPU is at the heart of all computers. It is not necessary to know how computers work in order to use them, but a brief explanation might prove helpful to understanding how the system can handle words like 'magic'. If you prefer not to learn any computer theory, turn to page 30 where a description of the other components of a computer system begins.

All the microcomputers are based on silicon chips. These chips are a direct replacement for the transistors found in electrical equipment in the sixties which, in turn, replaced the valve/tube of earlier decades.

Chips are collections of switches. There are tens of thousands of individual switches in every CPU, each one directly relatable to the sort of switch which turns on a light; these switches have only two conditions – on or off. Each switch is controlled by electricity, one bit of current turning them 'off', another turning them 'on'. It is the configuration of these switches (which is totally governed by the program in use) that decides what the CPU will do.

Chips are made by etching minute electronic circuits onto wafers of silicon. After the etching process, the chip is effectively a complete electronic circuit with thousands (or millions) of minute, separate transistors (switches) contained on its surface. These tiny transistors alter their state according to whether or not they are supplied with electrical current. They can only represent two states – 'on' or 'off' – but that is enough to provide total computing power.

The breakthrough in the development of computers was made in the 1930s when a German mathematician, Konrad Zuse, realised that instead of using the Arabic system of counting 0 to 9 and then 10 to 20 and so on, he would apply the 'binary code', a system of counting which used only two characters, a 1 and a 0, to his early electro-mechanical calculators. With only two characters, long numbers become very tiresome for humans to write – 17 is 10001 for example. But the computer speed is such that long numbers are no problem. This, coupled with the fact that the two symbols required could be represented by 'on' or 'off' states of a switch, provided the theory on which electronic computing is built

The step from electro-mechanical relays to purely electronic computers came when it was realised that a valve tube, by being either 'on' or 'off', could represent either 1 or 0 and could thus 'remember' a number. In a computer every single switch is given an 'address' in the live memory and, as explained below, the power of the computer to 'address' different memory locations simultaneously is the deciding factor on computer power.

Forty years later we are now using microscopic particles of silicon to represent 1 or 0 and by assigning certain values to certain numbers, perhaps suggesting that the string 11100110 should represent the letter A, the circuit can handle letters as well as numbers and can thus allow us to manipulate text.

There are far better and more lengthy explanations of how computers do what they do to be found in the multitude of computer books on the shelves; all that is really necessary for a writer to know is that all computers can assign code to represent letters and can thus handle text as easily as they can handle numbers.

8-bit or 16-bit?

The CPU has two important governing factors which a writer considering the purchase of a computer should understand – its 'bit size' and 'RAM' capacity. Many people consider that RAM (random access memory) is the most important indicator of com-

puter power, but as the amount of memory a computer can use is determined by the size of 'address' it can talk to, the bit size of the CPU chip is the most important single element in computer power.

A bit is a single piece of information – the '1' or '0' already discussed. Eight of these are gathered together to form a 'byte' of information, a combination of switch settings that can represent any letter of the alphabet or two numbers. Until 1982 almost every home computer was an '8-bit' computer. '8-bit' means that a central processing unit (CPU) can process eight bits of information at the same time. This type of CPU could handle proper characters and numbers and fully professional applications such as word processing became possible.

> I should apologise for the jargon at this point Jargon is intensely annoying to those outside a specialist field. In a mere thirty years the computer industry has managed to create a jargon jungle so dense that there are at least half-a-dozen different dictionaries of computing jargon on sale. Although jargon is annoying, its use provides the only effective shorthand way of describing some processes.

The circuits built around 8-bit CPUs allow the CPU to write 'addresses' out of 16 bits (two bytes) of information. This 'addressability' is the effective governor of 8-bit computer power as it means that the number of address locations that can be created by the CPU for 'live' random access memory (RAM – see below) is limited by its ability to work with only 16 bits. Thus two to the 16th power (65,536) is the maximum amount of individual memory switch locations that can be used with 8-bit CPUs. In practice this figure is rounded out to 64,000 and thus the traditional configuration of an 8-bit business computer system is: '8-bit, 64K'.

64K of memory and an 8-bit CPU allow powerful word processing to take place, but the limit of 64K on RAM size prevents microcomputers from being really effective all-purpose business tools. The new generation of 16-bit CPUs has changed all that.

How much 'RAM' does it have?

'How much RAM does it have?', is the second question that should be asked about any system. As will be realised from the preceding

section, RAM size is governed by the bit-size of the central processing unit. An 8-bit computer is limited to 64K or RAM. A 16-bit computer, like the IBM PC and the Radio Shack Model 16, is fitted with a circuit which can address 20 lines at once, instead of 16. In the dazzling manner of exponential maths, this produces a spectacular jump in computing power. A 16-bit CPU can supply memory address for locations of two to the 20th power (1,048,576K), thus offering the capability of having over *one megabyte of RAM* inside a personal computer!

RAM is the 'live memory' cells inside a computer. It is in this area that the tiny pulses of 'on' or 'off' rush around and store the numbers of letters demanded by the computer program. If the RAM is small there isn't enough space for complex programs to exist. A large RAM allows complex, sophisticated programs to work. The more complex the program, the easier it is for the user to operate. In general, the larger the RAM, the easier you'll find a computer to use.

It is possible to undertake limited word processing on a computer as small as a Sinclair ZX81 (Timex/Sinclair 1,000) with its 1,000 bytes of RAM. The work required by the user to get this little computer to shift text around is horrendous and only the most enthusiastic computer hobbyist is likely to try it; you'd be much better off with a pencil.

As a byte of RAM is capable of storing one alphabetic character it will be realised that 1K of RAM will be able to store about 160 words (allowing an average of six characters to the word). A system which can only hold 160 words in memory isn't very powerful. In practice, however, the situation is even more limited. A large part of the RAM has to be used to store the program which allows the user to move words around, to delete and insert letters and to offer some of the other functions normally associated with word processing. The result is that only a very few words can be stored inside a 1K computer without having to 'dump' (off load) them onto an external memory device such as an audio cassette player or a disk drive.

Commercially produced word processing programs are available for computers as small as 16K, but I wouldn't recommend them. One of the cheapest elements in computing are the RAM chips and the recent success of machines such as the Commodore 64 (which offers 64K of RAM memory) is a clear example that computers with fairly large RAM memories need not be prohibi-

tively expensive (although this machine is not particularly suitable for word processing – see Chapter 10).

I consider that 'serious' word processing of the type required by writers isn't really possible with a machine with less than 48K RAM and I think 64K is a far safer minimum size. In this configuration, there is often 30K or 40K of RAM available for text even after a highly-sophisticated word processing program has been loaded into RAM. This allows the computer to store up to 6,000 words in 'live' memory, available for instant recall and alteration, before there is any need to dump onto a memory store.

Despite the normal limitations of the '8-bit 64K' system, the best word processing programs for this type of computer appear to offer the user almost unlimited access to word-storage. In the program used for the writing of this manuscript, the system allows me to fill a 'page' (explained later) and then offers me a new blank page on which to continue while automatically storing the previous page on a floppy disk. If, during writing, I want to flip back to the earlier page, I hit two keys to say so (CONTROL followed by the letter P, for 'previous') and the page I'm working on is stored and the previous page is re-loaded into RAM and placed on the screen at my disposal. This process takes three seconds and thus I am given the illusion that all of my text is lying in wait for me in 'live' computer memory – instant access to up to 30,000 words (the capacity of the disk storage system in use).

16-bit machines are allowing computers to be built with much larger RAMs. With over 200K of RAM it is possible to use several programs at once – a word processing program, a communications program and a database for example - and the advantage for a non-fiction writer (or even a research-intensive fiction writer, such as Len Deighton) is considerable. In such a system the user can flip from the page being written to search a huge 'filing cabinet' (database) of information for background details on one of the characters in the plot. Len Deighton is currently writing a long-scale work in which he is doing precisely this, but without the advantage of a large memory computer. Len's most recent work is his trilogy of thrillers which started with *The Berlin Game* which was published in 1983. The characters and locations run through all three books, the story spanning many years and many locations, and Len created a 'fact file' on his computer system to store all of the personal data about each character (or location) and to keep track of what that character was doing when he or she last appeared in

the story. He has refined his system to such a point that it presents him with a questionnaire every time he calls on a character. This curriculum vitae was built up as the story progressed and finally included almost every sort of personal detail a real 'CV' might be expected to include. But Len is annoyed by the process necessary to access this information; in the middle of writing he has to take his word processing floppy disk from his machine, load the database (the electronic filing cabinet) and search for the records of one particular character. When he's found it, he has to take a print of the file contents and then go back to his word processing and return to the page he was on. His concentration has been broken and it has taken ten minutes.

Using a computer with 400 or 500K of RAM (and a hard disk attached for storage) he could have flipped into his database directly from the word processing page (both programs being held available in RAM), pulled the fact file on one half of his screen (in a specially separated window) and gone back to the story with the information available on the screen. It would have taken *between four and five seconds* and his concentration would not have been broken.

Text processing

Small-scale word processing programs available on low-powered microcomputer are often referred to as 'text processors' and this should act as a warning for all writers. The phrase 'text processing' has come to mean a truncated form of word processing which allows some text manipulation, but which doesn't allow the type of heavy manipulation needed by writers and journalists.

When you are considering the purchase of a computer which will be used primarily for word processing, there are three rules:

1) Choose your word processing program first
2) Choose a computer with the largest RAM you can get
3) Make sure the keyboard feels right for you.

Advice about buying budget word processing systems appears in Chapter 10.

The computer keyboard

The computer keyboard is the only means of putting information into a computer that makes sense for word processing. There are other methods of putting information into computers – numerical

keypads, 'bar code' readers as used at supermarket checkouts, musical keyboards, 'mice', etc. - but until computer intelligence progresses sufficiently for a computer to understand speech perfectly, the 'alpha-numeric' keyboard will remain the main type of input device available to writers.

The computer keyboard usually has more keys than a typewriter keyboard. Some computer keyboards are good for typing on, some are horrible. This topic is discussed more fully in Chapter 5 (Getting Comfortable). All computer keyboards have additional keys not found on typewriters and these are for controlling the special functions of the computer. On some larger micros the keyboard will incorporate a set of 'calculator-style' keys which are always positioned to the right of the alpha-numeric keyboard (bad luck on the southpaws). Some keyboards are sculpted and some are flat, some have 'key clicks', some don't. Some are detachable from the main computer, some aren't. One thing that is constant is a writer's need to be comfortable with a keyboard and the only worthwhile suggestion here is to *try it out for a considerable period in the showroom*.

Despite the many 'futureshock' articles about the computer revolution which appear in the press, the point at which the computer will become clever enough to understand the spoken word fully is still a long way off. Prophets in the computer industry must have an almost Kamikaze-like attitude about their future careers as so little is predictable, but those who are prepared to stick their necks out suggest that computers and the software should be able to understand the spoken word fully by the end of the century.

The barriers to computer acceptance of speech are vast. Consider the computer's reaction to the word 'eyesore'. The word sounds like 'I saw' and the meaning, and thus the selection of the correct word, has to be deduced from the context. This is something we super-beings do effortlessly, but a computer would have to examine the preceding words, look up their meanings and run these findings against a table of likely word combinations. This task would have to be started and completed before the human user had uttered the next word. Speech recognition is one of the aims of the much vaunted Japanese 'Fifth Generation' of computers which are expected to appear sometime around 1995. Until then, we'll have to bash away at keyboards.

Nearly all journalists, playwrights and writers are able to type

to some extent. Understandably, many writers have chosen to work in longhand in preference to typing because of the freedom it brings, but the only way of finding access to the even greater freedom of word processing is by typing. For that reason the type of keyboard supplied with the computer you choose is very important.

The standard typewriter-layout keyboard, whether attached to a computer or a typewriter, is known universally as the QWERTY keyboard – from the arrangement of letters on the second-to-top row. The problem is, that the keyboard layout was originally designed *to slow typists down*! When typewriters appeared at the turn of the century, many typists quickly proved that they were capable of developing typing speeds which outstripped the technology of the typewriter manufacturers. The typewriter keys could not be machined with tolerances fine enough to ensure the keys did not clog in high speed typing. The answer was to arrange the typewriter keyboard in such a way that the most frequently-used keys fell under the typist's weakest fingers and that they were spaced widely apart. This had the desired effect and even the best typists couldn't show up the machine makers.

Today a computer keyboard could accept typing speeds many times faster than the world record for typing speed, but we've all been brought up on the QWERTY lay-out and we refuse to be re-educated, no matter how beneficial it might be. Manufacturers have often produced more ergonomic keyboards, but such products are doomed to failure. Everybody types on QWERTY and that's how it will stay until computers can understand our spoken language.

The screen

A screen is one of the computer's main means of output and anyone using it as a word processor is going to spend hours staring at it. For this reason it should be as good as possible. (The subject of possible eye-strain and damage is considered in Chapter 5.)

If you're putting together a word processing system on a shoestring, you're likely to consider using a home computer connected

to a domestic television. Be warned that this can only be a very short-term solution. The resolution of domestic TV sets is not sufficient for hours of close work and you will rapidly develop eye-strain using an old TV. Monitors (professional computing screens with good resolution) are becoming very much cheaper in price and (as discussed later) you should budget to include a monitor in your system rather than a TV screen. One important word of warning is that very old colour TV sets – those made before 1970 – may give off small doses of X-ray radiation. This only extends a few inches from the screen and is so low in dosage that it is absolutely safe in all normal applications, but if you were to use such a screen for a close-up activity such as computing or word processing there would be a slim chance of causing real damage to your eyesight. Later colour TVs, all black and white TVs and all monitors are safer.

Larger computer systems usually have built-in monitors and they are generally of a fairly high standard. The typical computer screen measures 12 inches by 9 inches, the same size as a portable television. Screens of this size are able to display between 22 and 26 lines of text - equivalent to a single page of double-spaced typed copy.

Some dedicated word processors offer much larger screens capable of displaying up to 55 lines of text at one time. This allows a single-spaced A4 page (or 11 inches by 8½ inches) to be viewed, but this feature is of limited use to writers. Portable machines may use smaller screens – often as small as 5 inches – but the text is correspondingly smaller and 24 lines is still the standard display length.

The standard line length on computer screens is usually 80 characters – equivalent to a standard typewritten line - but some cheaper computer systems use displays which only offer 40 characters. These can just about be used for word processing but, as discussed in Chapter 11, the user has to make certain mental adjustments.

Readability is a vital factor when selecting a computer system. A writer will be staring at the screen all day long and if the words are hard to read not only will this cause eye-strain but it is also likely to inhibit word flow.

Some word processing programs make use of colour, but a colour monitor can be easily thrown out of balance and a 'ragged' edge to letters on a screen makes them very hard to read. Conversely,

coloured screens (as against black and white) can be useful providing the colour guns in the cathode ray tubes are properly aligned. Research in Sweden suggests that the most restful colour for the eye to work with is green, and this is the colour I prefer. I have a black and white monitor, however, but I have fixed a perspex green screen over it. It works perfectly.

Most computer systems offer white text on a black background. This appears perfectly natural after a few minutes' use. A few dedicated word processors offer black text on a white background in the hope of convincing the purchasing officers of large companies that the word processors are 'more like typewriters'.

A firm called Langley St Clair in New York is typical of the many companies offering peripheral equipment for popular computer systems. Langley St Clair offer a special 'Soft-View' screen which they claim can eliminate eye fatigue. These tubes are direct replacement units for a wide range of machines and offer either green or amber displays:

Langley St Clair Instrumentation Systems Inc.,
132, W. 24th Street,
New York,
NY 10011,
USA.

Another consideration when choosing a screen is the brightness and contrast of the display. Most professional monitors have a control which governs brightness but not all offer control over contrast. I prefer working with a dim display in a slightly darkened room. In order to adjust the screen to your needs, you may need both contrast and brightness controls.

When you are examining a computer system make sure that you are shown a screen that is full of text rather than one which just shows a few lines. Seeing a mass of text (as you will normally see while writing) is the only way to ensure that the screen display is readable to you. A few screens don't use true descenders – i.e. the tails to the p, q, y, g, and j letters – and on these displays the tails

are squashed into unnatural shapes which makes it hard to read several lines of text together.

If chosen well, the screen will become a very real medium to you, certainly as real as the paper that comes out of the printer. Tom Sharpe complains that he never feels that words are finished when he sees them on a screen: this is something that writers will have to get used to if they are to take full advantage of computer aid.

Storage: the floppy disk

On every computer system there has to be some means of storing words and information permanently. The essence of the word processing concept is that the individual elements of the mechanical task of writing are broken down, thus the point at which words are created is separate from the point at which they will be edited and separate from the point at which they will be printed. They have to be stored somewhere and on some medium which allows them to be recovered and stored again.

There are only two means of information storage available on microcomputers which are suitable for writers. These are known as the 'floppy disk' and the 'hard disk'. Many low-cost home computing systems utilise ordinary audio cassette recorders as methods of storing and recalling information, but this system is far too slow for any serious word processing. It might just allow the user to write individual letters and edit them, but it is useless for a writer.

Some 'compromise' storage systems have now appeared on the market. These systems are far less expensive than the drives needed for floppy disks (and much less expensive than hard disks), but they operate like a super high-speed cassette player and do provide much faster access than is possible with an ordinary cassette player.

One well-known example is Sinclair's MicroDrive – as fitted to the QL. Sinclair claim that this unit makes word processing possible even on machines such as the Sinclair Spectrum (although how the 'button' keyboard supplied on the Spectrum can be used for typing at speed is beyond me!). It is true that 'stringy floppy' storage systems (as these compromise units are called) allow some word processing to take place, but the system does not have the power or storage facilities writers need. Writers are the ultimate test for any word processing system – their long documents and heavy

editing ask far more of a system than any mass-mailing task or legal work.

A floppy disk is a circular plastic sheet covered with a magnetic coating in the same way that recording tape is plastic with a magnetic coating. Each disk costs between £3/$5 and £5.$7.50 and it can be used over and over again. The disk is sealed inside a square card container to protect it and holes in the card container allow recording heads inside the drive units which run the disks to 'read' or 'write' from the disk's magnetic surface. Disks are available in two principal sizes - 4.5 inches and 8 inches – and the size affects only the amount of information the disks can store. Many writers work successfully on 4.5 inch disks. I use 8 inch disks and I now consider the frustrations of the restricted storage on 4 5 inch disks would drive me mad, although new high-capacity 'mini disks' are now appearing. Either size will provide effective and powerful storage for word processing.

How much information (words) can be stored on a single disk depends on the size of the disk, the density of the magnetic coating and on the method of disk organisation used by the computer system. On an 8 inch double-density disk I can expect to store 25,000 words comfortably. I could squeeze more on (perhaps twice or three times that amount), but I like to allow room for later editing and expansion on the same disk without having to re-organise the storage layout. Smaller disks are more economical with space and the rule for working out storage capacity is to discover how many 'bytes' of information a disk can store (a byte is equivalent to a single character). Find out how much of the disk will be required to house the program commands and this calculation provides the 'spare capacity'. A disk which offers 150,000 bytes of space can, theoretically, store up to 25,000 words (working on the average of six characters per word), However, my 8 inch disk offers somewhere around 400,000 bytes which I consider to be fully used at around 40,000 words. It will be seen from these figures that a large margin is required for commands and instructions which are not simply characters. In a writer's parlance, a 5¼ inch disk will hold between 10,000 and 20,000 words comfortably (depending on machine and program configuration) and an 8 inch disk will hold approximately double that amount.

A disk stores information in a similar way to a record album. All computer operating systems divide a blank disk up into a number of tracks and store information in these. When a particular

piece of information has to be recalled, the system can find it by going to the particular track (there are 76 tracks on my disks) and looking for the 'file name' – the identity word for the document required. Once found, the information is picked up from the disk by a recording/reading head which floats just above the surface of the disk.

Disks typically revolve at 300 revolutions per minute when in use and it is partly this speed which allows the information to be loaded so quickly. By far the most important contribution to the speed of a disk system, however, is the lateral nature of the medium. It is analagous to the record album. To find a particular music track on an audio cassette the listener has to wind through the tape, but a record-player stylus can be lifted directly to the desired track of a record album. Thus a magnetic disk can be 'accessed' immediately. In word processing this is vital; writers often want to recall previous pages or chapters and unless these can appear on the screen in seconds, there is no point in having the system.

Disks have to be handled carefully as they are a delicate medium. They are supplied with protective paper jackets (in addition to the permanently sealed sleeve in which the disk is held) and they should always be stored in their sleeves. They should be kept in special disk boxes (supplied when disks are bought in tens) and the contents of the disk written onto the disk label in felt-tip pen – never in ball point or a hard pen which might cause an indentation (as they can on the back of photographs).

Even when in their boxes disks should be stored carefully. Although a careful writer will have a paper copy of the words contained on the disks, they are much more valuable in their 'fluid' form and personally I consign important disks to the safe at the end of a day's work. This isn't to keep them from thieves, but to keep them from fire damage. A disk distorts at 120 degrees fahrenheit and it is well worth buying a fire-proof cabinet to keep them in. Failing this, the best advice is to separate the 'master' disk from its 'backup' (or safety copy – a subject discussed later) and keep them at opposite ends of the house. Remember also that climatic extremes can damage disks. Relative humidity above eighty-five per cent can distort and disks should also be kept away from dust and direct sunlight.

Disk drives are an expensive element in a word processing system, especially as the writer really needs two of them. It is quite

possible to run a word processing system using a single disk drive, but some operations become tedious. As discussed in later chapters, there is often the need for copying the information from one disk to another. If there is only one drive in a system, the information has to be fed from the disk into the live computer memory (RAM), the disk replaced with the blank disk which will receive the copy, and the information transferred onto that disk. As disks hold much more information than most RAM circuits, this operation has to be repeated over and over again as the information is copied in small chunks. With two disk drives the information can be copied from one disk drive to the other leaving the user free to do something else The lack of a second disk drive also prohibits the use of 'add on' programs such as automatic spelling checkers. The sensible approach for anyone setting up a budget word processing system is to buy one disk drive to start with, but to plan to add another as soon as possible.

The hard disk

Few writers will choose to buy a computer system with hard disk storage at the outset. A hard disk is capable of storing anywhere between five and several hundred times the amount of information an 8 inch double-density floppy disk can store – between five and 300 megabytes (a megabyte is a million bytes, or approximately 180,000 words). Hard disks are the professional storage mediums used in mainframe computing and they work so rapidly that they allow almost instant access to this vast store of information.

Hard disks are also referred to as 'Winchesters' after the code word that IBM applied to the system when it was under development. These disks are rigid platters of aluminium, coated with a substance called sumarium cobalt The disks rotate at 3,600 rpm, over ten times faster than a floppy disk, and they are able to return data from storage to the computer ten times faster than a floppy disk. They can pour information onto your computer screen (and into RAM) at the rate of five million bits per second, forty times faster than the fastest floppy disk.

As a good floppy disk system is capable of acting so quickly that it becomes almost 'invisible' to the writer, it might sensibly be asked 'Who needs it?' The answer is to be found in Chapter 8 (Beyond Word Processing). In brief, such a storage system allows a writer to create his or her vast database of information. During the creation of a major factual work, such a facility can be invalu-

able. The factor of ten appears a lot in the previous paragraph and it will probably come as no surprise to learn that a hard disk system costs ten times as much as a floppy disk system.

The final element in the chain is the printer, the device which puts the words on paper. As this aspect is quite complex, it is discussed separately in Chapter 4 (Getting It Onto Paper).

Researching the market before committing yourself

Any computer system suitable for a writer is going to cost a lot of money and it makes no sense to buy the one the local shop has to offer unless you're sure it is the best option. You're going to have to live with your choice for a long time and regrets in computing are as common as bytes in a microprocessor.

The fact that you are reading this book illustrates that you realise that a writer's needs are different from other people's, but hard information about the various systems can only be gained from monthly magazines, manufacturers' literature and 'hands-on' experience. I place hands-on experience last on the list because without experience of word processing it will tell you very little and it exposes you to great danger. One problem is that all word processing seems magical to the novice and trapping a novice into buying the first system he or she tries is a favourite trick of computer salespeople.

The first consideration is the word processing *program* not the hardware. The best method of research is to make a firm decision about your financial ceiling and then explore the range of hardware available in that price bracket. When you have this list, reference to magazines, books and shops will tell you how many word processing programs are available for this list. Explore the programs first.

In addition to using this and other books, try to find other writers with word processors and ask them about their program and system. All will praise the system they have because of the power of word processing itself, but most will admit to niggles once they've told you how wonderful the whole thing is. The acid test is comfort; you need to find a system which is easy to use and which is reliable. I like mine – in fact I couldn't recommend it too highly – but other writers might prefer something else.

One depressing comment should be added here, although it is discussed in detail in a later chapter. In American book-publishing houses a standard for word processing seems to be emerging; that

standard is the IBM PC computer running a word processing program called 'WordStar'. WordStar is one of the best-known word processing programs in the world and it is extremely powerful. The problem is that it is hard to learn and despite its flexibility, there are several other programs available for microcomputers which are much, much better. Scripsit 2, available for Radio Shack computers, is one of them, Multi-Mate for the IBM PC is another.

'CP/M' is a phrase you will encounter as soon as you start researching. The initials stand for 'Control Program for Microcomputers' and CP/M is a brand name for a program marketed by Digital Research of California for 8-bit and 16-bit microcomputers. Early in the microcomputer revolution Digital realised that the main problem was going to be incompatibility between machines. The company produced a program – CP/M – which when fed into computer memory configured various computers to a common format. CP/M is an 'underlying' program which means that if you were using a CP/M-based system, the CP/M program would be loaded into your computer first and the word processing program would be loaded subsequently. In practice the user is not aware of this double operation and the entire system is loaded in seconds. Your decision, and it is an especially important one if you are going to buy an 8-bit computer, is whether to opt for a CP/M-based word processing system or whether to 'go it alone' with a system that is individual to a brand of computer.

The standards you will have to consider if you are planning to buy one of the more powerful 16-bit computers are CP/M-86 and 'MS-DOS'. MS-DOS stands for 'MicroSoft Disk Operating System' and it is this system that IBM have selected for the IBM PC (they call it PC-DOS, but it's the same thing). IBM are such a powerful name in computing that although they didn't enter the microcomputer market for seven years after Apple had started it all, they managed to sweep away existing standards within a few months and the 16-bit standard has definitely become MS-DOS with CP/M-86 as the major alternative. It is actually hard to find a 16-bit system that will not support MS-DOS and the choice in the 16-bit arena is slightly easier than in the more varied 8-bit market. If you're going to buy a 16-bit system, make sure that the operating system is compatible with the IBM operating system.

Installation

Although there is nothing particularly difficult in plugging together electronic items, the writer who feels ill at ease with technology is strongly advised to persuade the dealer who has provided the system to come along and install it, making sure it is all working satisfactorily before he or she leaves.

> The well-established or well-known writer may be able to do a deal with a nearby dealer which allows the dealer to do some small-scale publicity based around the writer's name. If this type of idea is possible for you – and you don't mind doing it – the sort of payment you ought to extract is twenty-four-hour advice and service. This is a commodity of great value.

The component parts of the system are keyboard, computer (CPU), disk drive(s), screen and printer. Sometimes one or more of these components will be in one unit - computer and disk drives or keyboard and computer for example – and the leads are usually fitted with different plugs to avoid mis-connection.

The writer who feels brave enough to bring the system home in cardboard boxes and undertake the installation will face some frustration, but much is to be learned from such difficulties. Each item in the system will have its own weighty manual and the amount of technical information offered is totally overwhelming. Asking a dealer to install the system allows the user to get into word processing without having to absorb much of this information, but the writer won't understand the system so well.

The writer who undertakes installation will learn a fundamental fact about microcomputing; nothing works the first time. Ploughing through the manuals, re-checking the connections and phoning the dealer is the usual course of panic-stricken events, but the system will work sooner or later.

Many writers do prefer to have their hands held; they want to be writers, not technicians. The only drawback to this is that the hand-holding can go on for a long time and the trainee doesn't learn as thoroughly as he or she would by heuristic exploration.

At the beginning of this chapter I commented that one of the extra facilities available with dedicated word processors was

extensive dealer supervision. Many microcomputer dealers are now rivalling the service offered by the dedicated word processor suppliers, but this hand-holding is likely to cease after a while.

Training

To some extent this subject is bound up with installation. In commercial thinking people have to be 'trained' to learn word processing. It is a marketable skill and 'word processor operators' is a category of employment now well-established in secretarial agencies.

It is reasonable to assume that writers have the intelligence not to require 'training'. All word processing programs are supplied with comprehensive manuals – some more obscure than others – but these should certainly enable a writer to pick up the basics in a day or so and become proficient inside a few weeks of regular use.

Scripsit for Radio Shack computers is supplied with a comprehensive manual and a suite of four audio cassettes on which an infuriatingly patronising voice takes the novice through ten 'lessons' which start with switching the equipment on and progress to increasingly complex tasks. I found this tutorial system excellent and in two days – seven hours a day – I could handle most of the functions without reference to the manual. It took a month or so for the system to become 'invisible' to me and ever since I've operated it without thinking about the mechanics of the system at all.

Some word processing programs are easier to learn than others. 'Apple Writer' for the Apple II microcomputer is very easy to learn and takes only a few hours – 'WordStar' for many CP/M-based microcomputers is very complex and full familiarity comes only after several months. Two important points must be made here. The first is that if a program is difficult to learn it often means that it is very powerful – there are simply more commands for the novice to learn. The second is that 'familiarity' with the program depends on the extent to which it is used. In an office, a secretary may only use a word processing program for one or two hours a day. A writer, on the other hand, is likely to be using a system for many hours each day, often seven days a week. This level of use makes it far easier for a writer to get to grips with a complex program.

Most microcomputer dealers can offer training courses, but these

are aimed at commercial (i.e. office) users and they are not likely to suit writers. Semi-professional writers are likely to want to learn in the evenings, professional writers are likely to want to take a crash course and get the whole thing over with in a few days. If you feel you need training, the best approach is to try to persuade the dealer to provide it on an individual basis to suit your needs. The dealer is almost certain to charge extra for this.

Night school for word processing isn't really practicable for writers unless they only write occasionally. Night schools take six months to cover what most writers could absorb in two days and the courses are all aimed at commercial applications. Tutors on the courses won't understand a writer's needs and even if you were to explain them, they would probably have insufficient experience to offer practical advice on the problems writers are likely to encounter.

The most sensible approach is to steel yourself and learn from the manual, ensuring that the dealer has someone in the organisation who knows the program and who is available to you on the telephone to help you with any elements you don't understand. This is the most economical method of learning and it is the best. As the old adage says, 'I am told, I forget. I am shown, I remember. I do, I understand.'

Guarantees, reliability, maintenance and service

Manufacturers' guarantees on computing equipment are sometimes limited to three months. The argument is: 'Microprocessors are so reliable that if they don't burn out in three months they'll run for ever.' Although it sounds like a glib excuse, there is something in this argument. Any breakdowns that occur are likely to happen in the first few days. The chips either burn out or they don't. If they don't, they'll run almost infinitely. The problem is that there are quite a few mechanical parts in a system which are more prone to breakdown.

In four years of using my system I've had two breakdowns. My computer is used on an average of eight hours a day five days a week, and for shorter periods over weekends, and I consider two breakdowns an excellent track record. I had made the decision not to buy a service and maintenance agreement when I purchased my system as the manufacturers demanded over £600 a year for this 'security'. For that money they guarantee a repair or replacement in twenty-four hours.

Once you're used to word processing it seems like a disaster when a system 'goes down'. Such is the power of word processing that even a temporary return to the typewriter is not something that can even be considered; it is like losing the power of sight. The threat implicit for those who don't opt for a maintenance contract is that they will have to wait a long time for service. In my experience, the determined user without the service contract can always get the repairs done inside a couple of days, although the calling-out fee is likely to be high. An on/off power switch on my computer failed recently. The replacement switch was £6 but the repair cost me £60. The difference was made up in calling out charges and labour charges. It sounds a lot, but £100 over four years is much cheaper than any sort of maintenance agreement. If my system had been accident prone, I would probably feel differently (I have to admit that breakdowns are my one abiding fear with word processing. The fact that I have written this book labels me as an advocate of the facility, but I must admit to a recurring fear that when I turn my system on in the mornings, something will be wrong. It's something to do with how much the whole thing matters to me now. I adore the power the system gives me; losing it for a day is a major disaster.)

Most microcomputer dealers will try to sell you a maintenance agreement when you buy your system. Whether it is worth buying depends on the price of the contract. If it seems reasonable – £50 a year excluding the cost of the parts would induce me to buy it – it should be considered. Consumer law will certainly protect you for the first twelve months and you might re-consider the prospect of a maintenance agreement after this period. By the end of a year you'll understand the system and know what can go wrong.

'There's so much to go wrong' is often a reason offered by writers for not getting a word processing system. Thankfully, microtechnology is very reliable and this sentiment is misplaced.

To buy or lease?

If you don't have the money to buy a word processing system, you should consider financing it by another method.

The cost of word processing is a legitimate business expense which can be claimed against income tax. If you lease equipment there are considerable tax advantages (assuming you earn enough money from writing to pay tax) and although the monthly lease terms will be high, the actual cost to your company or private

business will be less in real terms. The main problem is that few microcomputer dealers offer this facility; it is left to those companies who supply the dreaded, overpriced, dedicated word processors.

Other finance choices include bank loans and HP agreements, but the important thing to realise is that *a word processor is the most cost-effective purchase a writer can ever make*. For this reason, force yourself to accept usurious HP interest rates if necessary. Don't wait 'until it gets cheaper'. If I lost my word processor tomorrow and I was without a penny, it would be my first consideration. I would certainly acquire one before I had a car.

3

The Word Processing Program

How to choose a word processing program

Choosing which word processing program to use should always come before the choice of computer system. It is the program, the set of instructions which tell a computer what to do, which is all important. The largest investment you will make when buying a word processing program will be the time it takes you to learn to use it, and switching from one program to another is a very costly business. There are over 400 different word processing programs available for handling English language text (over 100 for the IBM PC alone), and this count includes only those powerful enough to be of interest to writers and journalists. There are countless more 'text-processing' programs for home computers which are capable of automating letter-writing and dealing with short documents. The problem is that every word processing program is different in design and has different rules for its use.

For this reason, the choice of word processing program is not something that any professional (or semi-professional) writer or journalist should undertake lightly, yet the majority of word processing programs are actually bought with little consideration for their suitability for writers. Worse, the choice is often based on a particular brand or model of computer, because the purchaser has been told it is 'reliable'. Professional writers will be using the program every working day and because a powerful word processing system is expensive, it is vital to ensure you are not burdened with a program which cannot easily carry out the sort of tasks you have to do.

It is *not easy* to learn to use a good word processing program,

but neither is it a daunting task. Each new concept can be taken in 'byte sized' pieces (sorry!) and I think it is akin to learning to drive. (Thankfully, there's no rigorous test to go through before you can venture out alone.) The reason why it is difficult to learn to use a word processing program is that you are forced to think about and to analyse things which you have always done automatically. Most writers who haven't used word processing won't know how many lines of text there are on a standard page, and they won't know how many characters there are in an average line (although they'll be able to say how many words there are on a page). All of these operations have to be 'explained' to a word processing program if it is to work properly. The program will probably arrive with some assumptions already made on your behalf by the program's authors, but you will have to analyse how you work in order to get the best use from it.

The introduction of a computer to your work style demands a complete analysis of your working habits and this can turn out to be a taxing but rewarding task. Dorothy Dunnett studied *how she worked* before she considered computerizing her work, but few writers are so organised. Despite this, the computer will force such an analysis on most writers shortly after its arrival simply because so much is to be gained by aligning your computer to your special needs.

Screen displays

Some low-power computers and word processing programs may offer only upper-case letters; these should be avoided as the work in coding letters according to case will get in a writer's way. The Apple Writer program with an un-modified Apple is an example of this type of program, fine for home hobbyists but worse than useless for professional writers. Some smaller computers have a screen width capable only of accommodating 40 characters. These are also to be avoided, as the width which corresponds with the typewritten page is 80 characters wide (usually described as 80 columns). Most small home computers (un-modified Apples included) only offer screen displays 40 columns wide and unless they can be modified to display in the 80-character format, this is a major reason for eliminating a computer from your shopping list.

WYSIWYG and EMACS

There are two main 'schools' of thinking among the creators of word processing programs: the first could be described as 'WYSIWYG' (an acronym for 'what you see is what you get' – pronounced 'wizzy-wig') and the second as 'editing' programs.

Wizzy-wig programs provide the user with a clear screen display that mimics the appearance the words will have when they are printed. Thus, if the writer has chosen to work in double-spacing, the lines of text on the screen will appear double-spaced. If a block of text is centred it will appear in the centre. The limitation is that the type style on screen won't change – e.g. italics won't be shown in italic – and words which are stressed in some way, bold or underlined words, won't normally appear enhanced on the screen. In other respects the screen display gives the user a pretty good idea of how the page will look when it is transferred to paper. Many writers prefer this approach and many people feel that wizzy-wig programs are easier to use.

Against this is the fact that editing programs are usually more powerful. In this concept the contents (i.e. the text) of a 'file' is all-important but the screen layout less so. In editing programs the final layout is ordered by a series of commands to the program which can completely alter the way a file is laid out at the print stage. The power of an editing program allows the user to look at two texts at once to compare them and to move through a large document with considerable ease.

The two schools can be thought of as 'user-based' (wizzy-wig) and 'computer-based' (editing). Word processing was developed as an aid to computer programmers (with little thought of wider applications) in the 1950s. In 1964 the commercial market attracted IBM and they launched the Magnetic Tape/Selectric Typewriter. The MT/ST stored characters on twin tapes, transferring from one to the other when corrections were made.

The writer definitely needs most of the power of an EMACS system even more than the ease-of-use inherent in wizzy-wig. Seeing what you get on paper is useful only for novices. After a few weeks that seems less important and the ability to alter printed layout and manipulate text becomes more urgent. Fortunately some programs manage to combine elements of both approaches. WordStar and Scripsit (two of the most popular word processing programs in the world) are both wizzy-wig programs, but they have

some elements of powerful editing attached to them. For the writer new to computing, a what-you-see-is-what-you-get program is easier to learn, but it is worth ensuring that most of the features described later in this chapter are available.

The honeymoon

It would be natural to think that as with all new 'toys' there is a novelty or honeymoon period for writers who acquire word processors, which wears off fairly rapidly. This seems not to be the case. Most writers to whom I have talked about word processing find their delight and fascination growing as time goes by and the flexibility of the microcomputer grows; it has certainly been true for me. The power of the word processor is so great that the shortcomings of individual programs will seem minor compared with the overall power of the concept. It is only when an experienced word processor user gets 'hands on' experience with someone else's (better) system that shortcomings may become apparent. Sometimes those drawbacks are significant, sometimes they are incidental, but the experience can be salutary and the best method of avoiding it is to identify your needs clearly before you find a word processing program to match.

General considerations

Journalists need different things from word processors than writers. Journalists must have speed; the turning on and setting up of a system must take seconds rather than minutes (although nobody wants to wait). The equipment must be robust enough to stand up to general office life (which means withstanding invasions from inquisitive outsiders) and, most importantly, the program and the system *must be able to network and or communicate.* In the USA nearly every newspaper and magazine is written and typeset electronically at some stage. In the major newspaper houses journalists have been using word processing for years and they are now using portable machines.

In Britain journalists hardly know what a computer keyboard looks like. The very restrictive working practices pursued by the print unions in Fleet Street have ensured that most of British periodical publishing is still in the Gutenburg age and there will have to be a major confrontation between print workers and management before British print journalism can take advantage of the new technology. I understand the reasons for this delay but it

seems inevitable that the introducing of computers for journalists will reduce the need for skilled typesetters.

Outside of the moral question of job protection, the convenience and power of electronic writing is undeniable. By the nature of their occupation, journalists have to be out and about, where the stories are happening. The traditional method is to attend the event, interview the witnesses (or equivalent) and get back to the office and write the story – checking in the files for background or data required. During my years as a reporter, I would always come away from a stimulating incident writing the intro to the story in my head. Sometimes I would even scribble down the few opening lines I thought of, but invariably, these were thrown away when I got to the newsroom and was greeted by the messages, telephone calls and babble of that adrenalin-filled hothouse.

Now a reporter can write the story immediately after it is witnessed. Using one of the lap portables – such as the Tandy 100 or the NEC-8021 A (see Chapter 10) – he or she can get 1,000 words down and ready to 'dump' into the master computer system at the office. They don't even need to visit the office to do it. If they can find a park bench near the scene of the fire they can rattle out the eye-witness account and send it from a public telephone to the office where it will be collated by the subs to marry into a fuller story created with the benefit of reports from the hospital, fire and police desks. The master computer stores the reporter's copy and the sub-editors are informed of its arrival. The sub-editors 'taste' all of the relevant part of the story, marry it together on their desk-top screen and send it directly to type (without need for typesetting). The next time they would see it would be in print on the page (or on the screen if the medium was Prestel, Ceefax, a commercial database or a similar electronic medium). If the 'on-the-scene' reporter does need to check master file records before writing or completing the story, that can be done from the phone while he or she is in contact with the master system.

The ideal reporter's system would consist of a portable word processor which can be connected to a master office by the phone lines. Only a few newspaper offices in the USA and in Japan are using such a complete system at present, but it is only a matter of time before it is commonplace. The reporter needs a portable, large-RAM word processor. Such things are only just becoming available as I write, but part of this book was written on one and the value of such 'out board' processing ability – referring to the

portable nature of a remote processor which dumps material for handling in the mother system – is undeniable.

Word processing for writers

Writers provide the hardest test for any word processing system. Manuscript lengths vary between 15,000 and 500,000 words (500K to several mega-bytes of computer memory) and, at the upper level, microcomputers with floppy disks are only just reaching this type of power-handling capacity. With a ten mega-byte hard disk attached, a word processing system can store the equivalent information to that held on 60 single-sided, double-density 5.25 inch floppy disks or, if you prefer a more literal illustration, 5,000 typewritten A4 pages or about ten books the size of this one. That is sufficient storage space.

But although hard disk systems are getting cheaper, they must still be considered relatively expensive and by no means a necessary investment for a writer. No writer produces 100,000 words of straight copy. It is invariably broken down into chapters and it is by organising word processing in this way that most floppy disk-based microcomputer systems are able to digest such large amounts of information. It is also fair to say that writers can't dispense with floppy disks even when a hard disk is attached. Although a hard disk is more durable than a floppy disk and is less prone to corruption (i.e. the ultimate danger of losing work), back-up copies of the information stored on the hard disk have to be made, just in case. These backups are usually made on a batch of floppy disks rather than a second hard disk system.

Typically, a chapter will consist of 10,000 words. Writers are used to thinking in such terms, but in the majority of computer sales showrooms I have visited, sales staff are unable to help with discussions on that type of document. They're trained to know about letters, mailings, and leases, but in conventional word processing jargon, long documents are those of more than six or seven pages. They can't tell a writer why their system is suitable for him or her, even though they are bound to insist it will be.

How many pages?

Thankfully, word processing parlance uses 'pages' as units of type, as though sheets of paper were being fed into a typewriter. It helps enormously with visualisation for the computer novice and this is certainly how you should approach the subject.

All writers work in double spacing (still thinking in typewriter terms) and this means that they get about 25 lines onto a page. Most writers wouldn't know this – they type or write to a style without worrying about how many lines or how many pages are being used. In word processing this has to be considered. As detailed later in this chapter, 'formats', such as line spacing, number of lines per page and paragraph indentations have to be carefully considered in advance; decisions which writers with typewriters make automatically as they go, have to be mentally articulated and put into action. Once set for a document, however, the format will require no more thought (unless there is a format change required within the document).

An 8,000 word chapter is likely to occupy 40 'pages' with 25 lines on each. Some writers will 'open' that document file, face the blank page 1 and then plough steadily on until they reach the end. They will then consider changes and editing. Others (like me) will work in fits and starts; some days completing ten pages in sequence, other days revising early pages and then jumping to page 15 to move a quote, a reference or description. Either way, the document is subject to very heavy editing. Often, writers will decide to move entire sections around inside a chapter – they might consider changing the order of events or scenes in the story – and this may involve moving three or four thousand words around. In the pre-historic days of longhand and typewriting this meant literal cutting and pasting of paper, as paragraphs were swopped and new characters inserted. Word processing makes this process blissfully easy, but it is an arduous test for a word processing program and it will reveal any shortcomings and faults that exist in the program.

Bugs and safety of work

All word processing programs have 'bugs'. In computer jargon, a bug is an error in the program. The list of instructions which go to make up a word processing program is very long and it is inevitable that a programmer will not see all of the possible problems on the first writing. In fact, a program has to be tested exhaustively in the field to make it substantially 'bug-free' and it is a truism in computing that there is no such thing as a 'bug-free' program. The problem for the writer is to select a program which is as bug-free as possible.

Program errors can cause the greatest disaster of all for a writer; *lost work*! If a secretary using a word processing system hits a bug,

the worst that happens is that the letter or document in question has to be re-transcribed from shorthand notes or audio tape. If a mailing company loses *all* of its addresses in the system through a fault, they can be re-entered (although there should be a security copy, anyway), but *a writer's work can never be replaced*. This is something that word processing salespeople fail to understand and, therefore, fail to provide adequate training and/or warning about.

Not every keystroke made by a writer is precious, of course. Revising, editing and tinkering are the less dangerous stages of the operation and printed copies of the work should exist by this stage. It is the origination of words from thin air (especially words of fiction, that most painful and awful of tasks) that is the point of greatest risk.

When I installed my word processing system I was writing a novel. Two weeks later I was working on a Sunday morning when it suddenly started to go especially well, I got a couple of thousand new words out before lunch. It was one of those rare moments when time ceases to exist and the excitement of the story and of the act of creation obliterates all other awareness. When I had finished I slumped back and typed in the instructions for the words to be saved. The system started the operation and went haywire. To cut a long (and still painful) story short, I lost my words. Panic set in, there was nobody I could phone. I read and re-read the 10,000 word computer system manual but the words seemed lost. I felt I couldn't repeat them. I had no other copy and the idea of re-writing what had come in such a way was unthinkable. I spent that afternoon wandering around London's Natural History Museum gazing dejectedly at dinosaurs, wondering whether I could return to my typewriter.

Those words were lost forever. There was a bug in the word processing program I was using. This information was relayed to me with a cool apology by the customer relations officer of Tandy UK. I don't think he understood my wail of anguish: who would but another writer?

That was the first version of the Scripsit word processing program – in computerese 'Scripsit 1.0'. Scripsit is now on version 2.0a – having been through 1.0a and 2.0 – and is almost bug-free. I haven't lost any words in years, but the program is now in its fourth version and I'm told that five years of man hours have gone into its production and millions of user hours must have detected almost every possible fault. I still know how to make my Scripsit

program 'lock up' (i.e. cause the computer to come to a complete standstill and have to be re-started) but there's certainly no risk for a new user.

I'm told that every writer who comes to word processing loses valuable words *once*; never again. Had I run out a printed copy of the words on that Sunday morning before I had tried to save them electronically, I would have had my 'hard' copy – as the printed version is called. (More about safety later.)

Finding out whether a program is bug-free (in relative terms) is hard. Certainly the best-known programs, Scripsit, WordStar, Magic Wand, Multi-Mate, Perfect Writer, Apple Writer, etc. have been around long enough to have had most of the bugs ironed out and if a writer is faced with the option of using a tried and tested program or a new one, he or she would be well advised always to go for the one that's had the hours of use.

Testing a word processing program

De-bugging a program is the hardest part of program writing. The programmer has to consider all of the negatives, one of the hardest things to do. In designing the program the programmer may decide that 'Control D' will cause a block of text to be defined in the 'page', but the programmer then has to consider what could go wrong if, during this process, the user's hand slips from the 'D' and hits the 'S'. The programmer has to disable the other keys for safety during this operation – but does that disabling cause any problems of its own, and will the operation eat into valuable memory space that is being used to store text?

This is only a glimpse at the appalling problems of writing major computer programs, but I hope it indicates why there will always be tiny bugs in even the most advanced programs. The best way of de-bugging programs is to give them to the widest number of people to be used, then, when accidents happen, the bug can be identified and eliminated. The problem is that a writer's work is much too valuable to risk in this way.

When you are testing a word processing program before purchase you should try and cause it to 'crash' or to 'lock up'. The best way to test if a program is well-written is to do something wrong. Try deliberately hitting the wrong key, try hitting all of the keys at once, try stopping the program when it is copying a document, try interrupting when it is checking the spelling of a document. You can become even nastier; try hitting the 'break' key, try hitting the

're-set' key. The 're-set' key is the final solution in the computer world as it completely empties RAM and forces you to start again. (Some manufacturers sensibly place the re-set key in a place where it can't be hit by accident – recessed or under a cover). A good word processing program should ensure your precious text is stored to disk before RAM is wiped as on many machines a re-set key can be hit accidentally.

None of these nasty things should cause the program to lock up or lose text; the program should always close down the operation in hand safely and ask you for further instructions. If you can cause problems in the program in the shop when you're getting a demonstration, you can be sure you will have problems when you get the program home.

'Disk full' is one of the most terrifying 'error messages' that can appear on a word processor screen. Many, many word processing programs stumble at this fence. When a disk has no more room for text storage, what happens to the text currently being created and stored in RAM? Only a few of the best programs can deal with this. WordStar, probably the 'standard' word processing program, puts words at risk when a disk is full In Chapter 12 Terence Feely reports how he has lost work in this way and writers using WordStar have to check on the percentage of disk space available whenever they start work. The best programs (thank goodness Scripsit is one of them) find ways around this problem. The message 'THERE IS NO MORE ROOM FOR TEXT ON THIS DISKETTE' appears at the bottom of the page suddenly, but the program has measured the text in RAM against available space and produces this message at a point when it is still able to store the RAM text on the disk. The process is immediately to close the document you are working on and get a fresh disk into the drive. (I will admit that on the rare occasions when I am careless enough to overfill a disk in this way, the old panic rises. I know that I'm treading the knife edge between safety and word-loss and I don't relax until I've managed to siphon enough text away from the over-full disk to be safe.)

Some word processing programs display the 'disk full' message and allow the user to pop-out the disk in question and to insert a fresh disk. This is an excellent solution and one which I hope more and more programmers will adopt.

In order to ensure that the word processing program you buy is as bug-free as possible, make sure that you have bought the latest

version. Most major programs are updated every six months or so as the programmers iron out remaining bugs and add new features. Unfortunately old stock does sit on dealers' shelves and although you will be able to 'up-grade' your old-version program for only a partial cost from the software house, it is worth checking that you're buying the most recent version.

Ease of use

Ease of use is likely to be the writer's and journalists's first consideration when selecting which word processing program to buy, but it is a questionable quality. The salutary story of Tom Sharpe's experiences with an 'unfriendly' program (Chapter 12) reveals that the wrong choice of program can completely negate all of the potential advantages of word processing and can lead to great disappointment and frustration. On the other hand, if a program is very easy to use it is not likely to be powerful enough to handle large manuscripts easily. The best combination is a program which is powerful, but which has been written with 'layers' of learning ability in mind – i.e. it is easy to start using for simple tasks, but as the user continues with the program so he or she goes on learning about more features.

The most important thing about a 'user-friendly' word processing program is that it is likely to be 'menu-driven'. This little bit of jargon is the key to usability, in my opinion. It means that every time a decision has to be made, it is the program which thinks of the options, *not* the writer.

This is a fundamental point and it cannot be overstressed. There are hundreds of decisions to be made in word processing and for the writer, his or her thoughts should be *on the words*, not on the system. A word processing system that demands thought and constant attention from the writer will block the writer's attempt to think about the story, the dialogue or the subject. This can be a disaster.

Someone who has no experience of word processing will find it hard to imagine how many choices face a user. These are choices that as a typist the writer makes automatically, yet with a computer each step must be spelled out.

Some word processing experts argue that *menus get in the way* and slow down the use of a program. They stress that once a user has become used to a program the last thing they will wish to do is wade through a menu choosing options each time a decision has

to be made. I agree with that point and would add that for a menu-driven program to be friendly, each menu stage must be capable of being by-passed instantly. This combination offers the user the best of both worlds.

Scripsit 2.0a provides an example of an excellent menu-driven word processing program. In this program the program itself offers a menu of choices for each operation; starting a new document, printing a document, repaginating a document, etc., with the menu offering a 'default value' (i.e. a pre-selected choice) under every heading. The program allows the user to set these default values from the start and so, in practice, the user sets up each menu with the values that will most often be used. This means that when the writer wants to start a new document, he or she has only to hit one button to approve all of the values offered on the menu They are then established and the blank page is offered to the writer with all decisions made about its format. If the writer has to remember how to instruct the program about the number of lines on the page, the line spacing, the tabulation, etc., the writer is thinking about word processing rather than writing and the power of the system is blocking creative writing rather than aiding it.

Word processing features

There are many features of working with a word processing program which a writer will have to get used to. 'Scrolling' is a word processing procedure which may be hard to understand by those who have never seen it. *A computer screen is effectively a window which looks into a landscape that is larger than the window frame.* The information outside of that frame – e.g. the rest of the chapter – exists in computer memory but is off screen. Moving the 'cursor' down the screen automatically causes the material at the top of the screen to scroll up and off the screen and material waiting 'below' the screen to rise up and appear. In this way the user can view a large amount of material by looking at relatively small portions of it at one time. How much can be viewed at one time depends on the program and system in use. My system allows me to see 22 lines of text at one time – it's enough for me but others might prefer to see more without losing the top lines as they disappear off the top of the screen.

The 'cursor' mentioned in the last paragraph is a dot of light which tells the user where he or she is at one particular time (from the Latin *currere* – to run). It is best likened to the position of a

golf-ball in an electric typewriter. If it is half way along the paper, that is where the typist is at the time.

Cursors seem to matter to writers. Most cursors in computers are small squares of light which blink on and off. Some are triangles and some are underline marks. Tom Sharpe found the blinking an infuriating irritation; a task master demanding more words. It interfered with his thinking. On his program, the cursor could not be adjusted to stop blinking. On Scripsit (and any good word processing program) it can and it can also be adjusted in size to suit individual taste. This is a 'once only' adjustment and after customising, the cursor never needs to be considered again.

Writing with word processing

Each type of word processing program has its own method for creating a new document, but after selecting the appropriate options from the 'create new document' menu, the writer faces a blank screen (or almost blank, there is usually a 'status line' which provides information about margins, tabs, etc.)

As the writer starts to type the words appear on the screen. The initial surprise for someone using word processing for the first time is that they can keep on typing right past the end of the 'line'. Typists are used to keeping an eye open to see when the type is approaching the right-hand margin of the paper and when the right moment comes they 'return' the carriage to the left margin and continue. Typists have to decide when to end a word at the end of a line and when to move down to the next line. In word processing the program makes this decision and in practice the user types right to the end of the right-hand margin and the program automatically takes the whole word being typed down to the beginning of the next line. This feature is called 'word wrap' and it's very important. Some less-powerful word processing programs don't offer this facility and the result is many broken words at the end of lines. This makes the screen display very hard to read.

The writer continues to write as though writing with a typewriter. The words appear on the screen, wrapping round at the end of each line. Only when the writer wishes to create a new paragraph does he or she have to touch an additional control. To finish a line and move down for a paragraph opening, the user presses a key marked either 'enter' or 'return'. (Which name is used depends entirely upon the whim of the microcomputer manufacturer.)

This control terminates a line and moves the cursor down to the

start position for the next paragraph. Capital letters should be formed in precisely the same way as on a typewriter with both 'shift' and 'lock' keys available. Asking a writer to use any funny combination of keys to produce capital letters is asking too much, although regrettably some programs do so.

In this simple method the writer continues to type. At some point he or she will make a mistake, and this will allow them their first taste of the power of word processing. Using the direction keys, the writer can move the cursor back through the written text until it is situated over the word which contains the typing mistake.

> The speed of the cursor's movement is an important consideration; one of Tom Sharpe's criticisms about his system is that it took him a long time to position the cursor over a word he wanted to alter. A word processing system must offer both high and low speed cursor travel in all four directions – vertically and horizontally. When you are choosing a computer system, pay particular attention to the cursor-direction keys. These are special keys, normally marked with arrows indicating the direction they will move the cursor. When you are writing you will be using the keys a great deal and how they are positioned matters very much indeed. They should be close to the main keyboard, ideally in reach without moving your right hand far from the keyboard (sorry, left-handers). Some companies choose to configure the keys in a diamond shape – as used in the NEC 8201 portable (see Chapter 10) – but this diamond has to be large enough to eliminate the danger of the wrong key being hit. Some cheaper computer systems offer only left and right cursor-direction keys. Upwards and downwards movement is achieved by combining another key with the left and right keys. This type of keyboard layout is to be avoided by a writer; it's one more thing to think about rather than one less.

If the writer has mistyped a single letter in a word, he or she may position the cursor over the incorrect letter and type the correct letter. The new letter replaces the old one directly. More commonly the mistake is greater and a word has to be shortened

or lengthened. If the correction will require more space in the text, the user positions the cursor at the relevant point and hits the 'insert' key. There should be a key dedicated to insertion on a word processing system; having to use more than one key for the process will become an awful chore. On my Model II program, the key is 'F1'. This key opens a space in the text in front of the word to be corrected, as in this . ..... gap which would allow me to insert words between 'this' and 'gap' such as 'large'. This opening for insertion 'runs' ahead of the user and he or she may insert as much as they choose in this gap. When the insertion is finished, the delete key, 'F2', automatically closes the gap and the surrounding text automatically adjusts itself around the insertion to present a perfectly-spaced paragraph.

This is the real power of word processing; the ability to go back and insert, delete and adjust as the writer gets thoughts onto paper. With a typewriter the only method is typing between the lines or writing in with a pen. Both methods are messy and time-consuming and both may be used only once on a particular sheet of paper. The screen image can be altered an infinite number of times and it is this freedom that is at the heart of creative word processing.

Writers use the technique of insertion much more than deletion on origination of text and then tend to use massive deletions during editing. On my program, deletion is controlled by a single dedicated key, F2 (as it should be on all systems used by writers). This key deletes any character under the cursor and if it is held down, all text in front of the cursor is 'pulled back under the cursor' to be deleted. When the key is released all text has adjusted around the deletion. The bulk deletion of larger chunks of text such as whole sentences, paragraphs or pages is described later.

'Turning' pages

Using a typewriter, the writer is forced to take out the filled sheet of paper and to insert a blank sheet. On a word processing program this is done automatically. Most programs allow the writer to write more lines of text than can be held on a single page in a continuous stream. Scripsit allows the writer to create 84 lines of text (the top line rolling up off the screen as the new line is written at the bottom) before the program 'turns' the page. In the program, the text on the screen disappears momentarily and then reappears further up the screen. The program has allocated 55 lines to the first page and returns the remaining 29 lines to the screen so that the writer

can continue while being able to see the preceding couple of paragraphs. This means that the writer is always able to read over the most recently created paragraphs. In typing, this means picking up the previous sheet of paper.

Some word processing programs switch over to a blank new page forcing the writer to go back to the page to read the preceding lines. Other programs – WordStar for one – allow the writer to create large chunks of text before it is divided up into pages and stored on disk This latter system has a danger; if the electricity supply fluctuates or fails while a large chunk of text is held in RAM (the computer's volatile 'live' memory) that text can be corrupted or lost. The manipulation of text held in RAM is faster than manipulating text stored on disk, but safety has to be considered.

The maximum numbers of lines at risk from power failure with Scripsit is 84. Under normal working conditions, this is more likely to be 20 or 30 lines. The reason for this is because the program automatically saves text to disk in the form of pages every time more than 84 lines of text are created, in effect the program automatically turns a page. Going back to a saved page takes about six seconds, this time being taken up by the system saving the present page to disk and then loading the required page into RAM and displaying it. In WordStar it is possible to go back to the previous page in one second because it is saved in RAM and not on disk, but it is at risk all of the time it is in RAM.

In the USA there are 113.3 voltage 'spikes' a month on the national grid, an average of one every six and a half hours. In Britain the figure is similar. Different computers have different levels of sensitivity to this and most can accept some deviation in current before text held in RAM is affected. But what if someone in the house blows the main fuse? What if there's a power cut? With WordStar and quite a few other programs, 20 pages of text could be at risk and the effort of remembering to 'save to disk' after every 50 or so lines would be an interruption in any writer's flow. I prefer to use a slightly slower program which constantly saves my text to disk. I would be very nervous if the last 20 pages of this chapter were currently residing in electronic rather than magnetic memory.

There are other answers to the problem of interrupted electricity supply. Len Deighton lives in the Republic of Ireland in a remote area where the power supplies are rather erratic; he is constantly having power cuts. Olivetti, the makers of his dedicated word

processor, have fitted a nickel cadmium battery to his machine as a 'brown out' control. If the power ever fails, the battery immediately cuts in and protects RAM.

Protection against voltage spikes is also required if you live in an area with an erratic electricity supply. Protection is available by the insertion of a line filter or surge protector. There are many of these relatively inexpensive devices on the market and scanning the classified advertisement columns of the computer magazines should reveal a local source.

A British firm is advertising a product they describe as providing an 'uninterruptible power supply'. Called 'The Power Bank', this product regulates electricity supply and supplies instant switch-over to battery power in the event of a power fluctuation or failure.

The Power Bank is made by:
Power Testing (Sales) Ltd.,
23, Tallon Road,
Hotton,
Brentwood,
Essex CM13 1TE
UK
Tel: 0277 233188
Price on application.

Document length

The best word processing programs allow a writer to create a document of a length limited only by the storage capacity of the disk in use. With a 5¼ inch double-density disk (see explanation in Chapter 2) you can expect to be able to save about 80 pages per disk. A double-density 8 inch drive allows you to save three or four times that amount (depending on how the program configures the disk). If a hard disk is used as the storage medium, the page length is virtually unlimited.

Unfortunately, some word processing programs set length limits on the documents that can be created and this is a feature which must be investigated before purchase.

Help

One of the most annoying aspects of learning to use a word processing program is to have to keep stopping to look up how to carry out a particular function. The best programs enable the user to look up a quick reference guide to program commands without looking away from the screen.

These reference guides should be available at one or two key strokes and they shouldn't interrupt the word processing program. The concept is that the user should be able to request help, see a reference sheet on the screen and then immediately go back to the page that was being typed.

Figure 1 shows the help menu from the Scripsit program. It is in two parts as the Help menu fills two screens. Help is accessed in Scripsit by pressing two keys; 'escape' followed by 'H'. The Help menu loads from disk (it takes two seconds to load the first time it is used in a word processing session; thereafter it resides in RAM and can be accessed instantly).

The Help menu in Figure 1 is self-explanatory and it is an invaluable aid for the novice user. The key commands listed at the left side of the Help menu have to be pressed in combination with one other key, usually the 'Control' key or the 'Escape' key. Although this list of commands does not cover every function of Scripsit word processing, it covers everything the user needs to write and edit a document. Scripsit cannot be learned just from the screen, it is necessary to refer to the printed manuals and this is an area in which word processing programs differ greatly.

Documentation and training

Successful writers can probably afford to buy a word processing package from a dealer at a price which motivates the dealer to supply training and hand-holding during the early weeks. Most writers will be forced to buy word processing more economically, however, and when their discount house computer and mail-order word processing program are put together, they will probably have to teach themselves how to use it. How easy this is is governed by the documentation provided by the computer manufacturer and the program writer.

The Scripsit word processing program for my Tandy Radio Shack computer is supplied with two manuals and a set of four audio-cassettes. These cassettes form part of a total training package which I found delightfully easy to use. Sample documents are

Figure 1.

** SCRIPSIT – RECOGNISED COMMANDS **

Press ‹ESC› . . . To execute this command:

D* . . . Define text block: displays prompts for advanced editing features
D C . . . . . Define Character: highlights character under cursor
D W . . . . . Define Word. highlights word under cursor
D S . . . . . Define Sentence: highlights sentence under cursor
D P . . . . . Define Paragraph: highlights paragraph under cursor
D A . . . . Define Above: highlights all text above cursor on page
D B . . . . . Define Below: highlights all text below cursor on page
D M . . . . . Block Move: moves text block into temporary memory and deletes
D D . . . . . Block Dup: moves text block to temporary memory without deleting
(NOTE. To recall a Moved or Dup'ed block, press CTRL-R)
D F . . . . . Block Format: reformats a block of text to current format line
D H . . . . Block Hyphenate: hyphenates one or more paragraphs of text
D L . . . . . Block Lock. insures that highlighted block will stay on one page
W* . . . . Set Window Mode· displays prompts for changing display
W L* . . . . . Line-centering: centres one line of text
W F* . . . . . Format Line editing: permits setting of margins and tabs
W E* . . . . . Erase Mode on off: permits deletions without automatic reformat
W O* . . . . . Outline Mode on/off. turns indent or reverse-indent on or off
W V* . . . . Full Video Mode on/off: displays symbols such as paragraphs, tabs

Starred characters may be pressed with CONTROL key – ENTER to see next screen

** SCRIPSIT RECOGNISED COMMANDS **

Press ‹ESC›. . . To execute this command:

G* . . . Get Page· displays prompts for moving between pages
G N* . . . Get Next page: displays next page on screen
G P* . . . . . Get Previous page· displays previous page on screen
G A . . . . . Add new page· displays a new page at the end of the document
G (number) Get specified page number. displays a page by number
S* . . . . Search: moves cursor to next occurrence of specified text string
U* . . . Document Utilities: displays prompts for utility features
U P . . . . . Print document. displays full-screen prompts for printing
U G . . . . . Global Find Delete/Replace. for document-wide repetitive editing
U U . . . . Un-edit page: cancels all editing changes just made to page
U R . . . . Repaginate document: evens out all page boundaries
U N . . . . Number pages: renumbers or re-orders pages in document
U D . . . Delete pages. deletes one or more pages from document
U A . . . . . Assemble documents: chains multiple documents together
U M . . . . . Merge· merges text for printing form letters

Starred characters may be pressed with CONTROL key – ENTER to see next screen

Figure 1 *continued*

** SCRIPSIT - RECOGNISED COMMANDS **

Press ‹ESC›. . . To execute this command:

Q* QUIT· Closes document and displays disk directory

1 – 0 or ‹SHIFT› 1 – 0, execute a user defined key
(Note. to edit a User Defined Key, press CTRL Z)

‹LEFT ARROW› moves left margin to previous tab
‹RIGHT ARROW› moves left margin to next tab

Print codes:

- (dash) strike through surrounded text
— (underscore) underline surrounded text
= (equals) double underline surrounded text
+ (plus) surrounded text is printed in boldface
, (comma) surrounded text is a comment and not printed
. (period) stops the printer
/ (slash) roll to top of page
? forces end of page
‹UP ARROW› precedes text to be superscripted
‹DOWN ARROW› precedes text to be subscripted

Starred characters may be pressed with CONTROL key – ENTER to see next screen

already created on the original program disk and the novice listens to the voice as it steps through a series of ten lessons.

At the other extreme, WordStar is renowned for having one of the worst manuals in the computer business (although improved versions are promised). This drawback hasn't stopped the program becoming a best seller, but of the many writers to whom I have spoken on the subject, it is those using WordStar who have had the greatest problem getting to grips with the program. (To be fair, this is partly because WordStar is such a powerful and flexible programe – it is the old trade-off between power and ease-of-use.)

It is worthwhile looking at the documentation before choosing a word processing program. If it seems intelligible to you as a novice, it is probably worth considering. If it assumes more knowledge than you have it will only get worse as you go along. Documentation has been a weak area in the microcomputer market, but it is steadily improving. Of course, if you are offered some free training, *jump at it.* It will start you off in the right direction.

Document manipulation

Once a writer has learned how to create ordinary pages of text on a word processing system, he or she is likely to want to experiment with more ambitious manipulation of text. The power of individual word processing programs will vary, but all programs used by a writer should allow blocks of text to be lifted from one place and inserted in another. In Scripsit – and in many other programs – the procedure is first to define the block of text and then tell the program what to do with it.

These 'block moves' are sometimes called cut and paste functions in word processing programs and this clearly relates to the origins of these practices – a typewritten manuscript would be cut up and sections pasted into new areas. *The advantage with word processsing is that nothing is final* The writer can experiment with chronology and can juggle paragraphs endlessly. Several writers who have yet to use word processing have suggested that this freedom might be a danger – it might offer so much flexibility that no final decisions are ever made. I have not found this to be the case and I have not heard this complaint from writers who regularly use word processing.

Repagination

After a long document has been created and edited using block move functions, the length of the individual pages is likely to vary. A document is 'cleaned up' for printing by using the 'repagination' feature. This command is found in all word processing programs and it distributes the text evenly throughout a document, placing a set number of text lines on each page and re-planning the layout of the document in disk storage space.

I use the repagination command a great deal. A cleaned up and repaginated document is easy to work with as there is always space for insertions of earlier pages and it is easy to move around within a document. A 'heavy' text-intensive document which has not been repaginated is difficult to work with. An attempt to move a paragraph from one page to another may be thwarted if the host page is already totally full of text; the program can't store any more text within its page limitation. This page length limitation is often a text-protection feature and not a limitation of the program. Regular re-pagination allows free movement within the document and how well, or how badly, a word processing program carries out this function is an important test of its power.

Scripsit carries out repagination slowly but well. WordStar is much faster on this function. When you are choosing a word processing program it is well worth asking the demonstrator to show you how a long document is repaginated and, if it isn't quick and easy, ask to see another program.

'Headers and footers'

Although every word processing program automatically applies numbers to pages, they do not appear on the printed page unless they are specifically added by the user. With a typewriter the typist has to add the page number manually each time: by now it will come as no surprise to learn that the program is capable of adding these automatically.

The phrase 'headers and footers' applies to the specific function which automatically adds a heading or a 'footing' to every page. In many programs a special 'headers and footers' page has to be created. On this page, the user types whatever is required at the top or bottom of each page. This can be just the page number and in Scripsit the letter 'P' is coded by enclosing it in double curly brackets {} to tell the system to add the correct number to each page. (I would have shown the P enclosed in these brackets in text,

but my program always assumes that it has to print the page number when it comes across this sequence.) It is possible, of course, to add quite a lot of information in a header or footer. This can include descriptions such as 'Chapter 1' or it can include the date.

During printing, the program automatically prints the headers and footers 'page' between each document page, the program automatically ensuring that the right page number is applied.

Footnotes and references

One of the delightful things about good word processing programs is that 'difficult' jobs like referencing and footnoting are made much easier. Sub$_1$ and super-script^2 characters are easy to write: in Scripsit the command is ‹ESCAPE› followed by the direction (up or down) required. When the number has been written, the command ‹ESCAPE› followed by the opposite direction arrow restores text to the main copy line.

Using 'markers' in text – e.g. placing an * at a point you will want to return to - makes it easy to ensure that references are in sequence. This is done using the 'global' command.

Global features

The functions offered under the heading 'Global' are unique to word processing and offer a service unobtainable by any other means.

If, after reading this section, you decide that Global features will be of use in your work, make sure that when you are choosing a word processing program its Global features are described as 'Global, Find, Search and *automatic* Replace'.

The term Global indicates that the function in question operates over the *whole* document being worked on. Global facilities are word processing functions which most closely resemble traditional data processing. Global Find calls up a function which searches through a document (no matter how long) to find a certain 'string of characters'. This is normally a word. When I am writing and I want to find where I introduced a certain character I call up the Global menu from the Utilities menu by pressing 'G'. The menu is shown in Figure 2.

The first question asks me if I wish to Find, Delete or Replace. The default value set by the programmers is the safest; 'F' for Find. Any other default setting might result in words being accidentally deleted or replaced in a document.

Figure 2.

```
** SCRIPSIT - GLOBAL FIND/DELETE/REPLACE **

 Find, Delete, or Replace (F,D,R) ?
F
 String to find:
_____

 Ignore upper/lower case on search (Y or N) ?
Y
 Replace with (not applicable to Find or Delete).
_____

 Start search on page number (type number or 'C' to start at cursor position) ?
C____
 End search on page number (type number of 'E' for End page) ?
E____
 Stop at each occurrence or Repeat continuously (S or R) ?
S
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The next prompt in the menu *must* be answered. It is here that the user enters the word, number or character that is to be found. Spaces around a word are ignored, unless the string consists of more than one word. The next prompt asks whether the search is to ignore any capitalised letters found. This is an important option as it can narrow down the search in many cases. (If you want to find 'Bill' in a story, you don't want to find the telephone 'bill'.) Unfortunately, many word processing programs omit this differentiation between capital and lower case letters in their Global functions.

The rest of the prompts are self-explanatory. By defining between which pages the search is to take place, the time taken can be reduced.

The last prompt is the automatic replacement feature. This is extremely useful and one I use a great deal. Many writers find it hard to choose names for their characters which fit precisely the personality they want to create. Often the right name doesn't come to mind until much of the story has been written and more of the personality of the individual has emerged. In this case, the writer can apply a working name to the character and go back later and cause every 'Bill Sykes' to be replaced automatically with 'Uriah Heep' in the text. Naturally, all surrounding text re-forms automatically around the insertion or deletion of space. The auto replace function is the most powerful of all the Global features and in Scripsit it is capable of scanning a 30,000 word document and replacing a couple of hundred words in a few minutes. I might, for example, decide to replace word processing with word-processing in this document. It would certainly be a chore to find every occurrence of that word in this text, but the Global search could take care of it almost instantly.

> *Warning*: The 'automatic replace' facility must be used with care. In Chapter 12 Dorothy Dunnett recounts how, after deciding to use this feature to change a character's eyes from blue to brown she ended up as the only writer in the world whose characters made love under a brown sky.

There is another use for the Global function, and it allows the writer to build a small electronic filing cabinet, or database, as it

is more properly known. A writer frequently makes notes when working on either fiction or non-fiction. The problem is finding those notes when they are needed. Jack Higgins says he writes out his notes under various headings and sticks them all round the walls of his office. When he's working, he's dancing backwards and forwards to his walls, gathering his notes in a very physical way.

With the Global search facility, the writer can create a document called 'Notes' and can enter notes during research, saving them in his file. When they're needed, the writer can open this document and can order the Global function to search for any keyword chosen – U-boat, Kennedy, PVC piping, etc. – and in a matter of moments, the writer has the notes which can be duplicated and transferred into the body of the text in preparation, if so desired.

When the user selects either Delete or Replace from the Global menu, there should be a fail-safe means of ensuring that the user has to check whether it was intended to alter the entire document as specified. Working at speed, it is certainly possible accidentally to order the re-place of the wrong word. In Scripsit, the program asks the user to confirm the menu selection again if the automatic repeat feature is selected.

Many otherwise excellent programs fall down on their Global features. Terence Feely uses WordStar and he is annoyed that it would not replace automatically every word when he selects the function. The program stops over each word and he then has to tell the program whether to replace it or not. The auto-replacement can be dangerous if it whips through a document by accident, but, as Terence Feely has discovered, changing a character's name throughout a script becomes very tedious when manual instructions have to be given.

One advanced feature in Global functions is the addition of a wildcard element. This allows the user to specify uncertain characters as 'anything'. The usual symbol is a * and if I were unsure whether or not I had added an 'e' to Tom Sharpe's name, I could ask the Global program to look for 'Sharp*'. Global is a very powerful and very useful function that is unique to word processing.

Typewriter mode

The typewriter mode turns the word processor into a typewriter. This may seem absurd but there are times when such a facility can be useful. Scripsit has not got this function, but I would often like to 'type' an envelope to save going through the print menu, and,

more importantly, I would like to be able to insert a printed form into my printer and type inside the given spaces from my word processor. This is a useful feature that's found on quite a few word processing programs.

Maths function

Scripsit doesn't offer a maths function either, but it's a very useful adjunct to word processing. In most programs maths capability is limited to the four arithmetic functions, but it is very useful to be able to total a column of figures within a program or to do some simple calculations without leaving the screen.

Hyphenation

Hyphenation is something writers don't have to think about with a typewriter; they finish a word and then go down to the next line. With a word processor, the writer is given the opportunity to create printed pages with justified right and left margins. Fuller details of this appear in Chapter 4 which is concerned with printing techniques, but it is obvious that if all of the lines on a page are to be made of equal width, some words will have to be hyphenated. (In practice it is possible to justify a page of text without hyphenating, but some lines appear crammed with characters and others have large spaces.)

A good word processing program should allow the user to hyphenate on a local or global scale. There are two types of hyphen in word processing, a 'hard' and a 'soft' hyphen. A soft hyphen is one which disappears when text is rearranged, moving the word away from the end of the line. A hard hyphen is one that is inserted as text, perhaps to link portmanteau phrases such as 'disk-based'.

A standard word processing program doesn't have the 'intelligence' to hyphenate automatically; it highlights the words that can be split and the writer tells the program where to make a break. In hyphenation mode, the program should always insert soft hyphens which will disappear if a line is rearranged.

Many word processing programs have an automatic hyphenate facility, but these are always coupled with a dictionary program. In the dictionary words have been hyphenated according to a set of rules chosen by the programmers and the program checks with this dictionary and inserts hyphens according to the way the word is split in the dictionary. Good auto-hyphen programs never split words on two consecutive lines, never at the top or bottom of a

page and never in an unnatural way. In practice, most writers would prefer to insert hyphens personally. I have rarely justified text since getting over the novelty of producing a 'print like' page and thus auto-hyphenation is only of occasional use to me.

User-function keys

The ability to program a particular key on the computer keyboard to carry out a special task is a sophistication that is likely to appeal to the experienced user rather than the novice. Nevertheless, this ability should be offered in any good word processing program as it can cut the writer's work load considerably.

This facility is often described as either 'user-function keys' or 'glossary' keys. If a program describes the facility as user-function, it is likely that the writer can carry out any of the normal word-processing functions, e g. printing a document, simply by a single keystroke. In programs in which this facility is described as Glossary, it is more likely that the user will be limited to placing a group of words under a single key. Thus by pressing one key a string of words, e.g. 'Thank you very much for your kind letter', will be placed on the screen. This can save a considerable amount of typing time and a facility called 'user-function keys' will also offer this ability to store text. Dorothy Dunnett uses her Glossary keys to store certain words she uses in her reply letters to fans. One key gives her 'Thank you for your interest in the Lymon books . . .'

In Scripsit, I can define 20 keys which will carry out a certain task (when they are depressed in conjunction with the ‹ESCAPE› control). Each of the twenty keys can be programmed to carry out *255 keystrokes*, which can create any character, call any word processing function (except to leave the program) and which *may call on itself*.

As an example, on the disks I keep for letter writing I have placed the 20 addresses I use most frequently in correspondence under these 20 keys. Not only are the names and addresses stored under the key, but also the spacings I want between letters and lines. When I open a blank page to write to my publishers, I press ‹ESCAPE› and one of my user-function keys and the name and address spill onto the screen in the correct position and the cursor drops down and starts 'Dear Ian,'. The cursor then moves down to the space where I want to start the actual letter. This saves me having to look up the address and the labour of having to type it out. I use the same technique for addressing envelopes.

In this book, the words word processing, word processor and microcomputer all appear frequently. I did not type them in the last sentence, I pressed ‹ESCAPE› followed by '1' for word processor, ‹ESCAPE› '2' for word processing and ‹ESCAPE› '3' for microcomputer.

Back-ups and copies

I've left one of the most important aspects of the word processing program to the end of this chapter. As I've said earlier, the worst thing a word processing program can do is lose work. For this reason, the writer has to make frequent copies of the document in question (always onto another disk) or the whole disk must be copied – i.e. 'backed-up'.

When a document is short, it takes much less time to copy that single file onto a spare disk. Writers rapidly take on the disciplines of computing once they realise that the security of their work hangs upon it, and the routine for making safety copies of work is universal to all word processing programs. Work is always copied onto a second disk because the most frequent cause of problems is disk failure; a disk becomes corrupted and the system is unable to read the information stored on it.

For a short document, perhaps ten pages or less, the fastest method is to keep a spare disk available to take the security copies. Once a document gets bigger than ten or more pages, I consider it worth backing up the entire disk as the time taken to copy a document from one disk to another is probably longer than copying the entire disk. This means making an absolute copy of the disk including program, defaults and all documents.

Having suffered one bad experience with losing work, I now back-up with a pathological intensity. I back-up twice a day if I'm writing – other than just writing letters, etc. – once at lunch-time and once in the evening. I never bother to copy documents, I always back-up the entire disk. I put a spare disk in drive 1, order the program to copy everything from the disk in drive 0 onto the disk in drive 1 and walk away. Scripsit takes about 10 minutes to back-up an 8 inch disk, some programs are much faster.

Unless a word processing program can be made safe, it isn't worth having. Back-up at least twice a day when you're writing.

Researching before buying a word processing program

Step one is to read the reviews of word processing programs in the computer press. There are several magazines devoted to word processing and commercial programs and these will provide regular reviews of word processing programs.

Talk to other authors about their word processing program. Remember that they will always enthuse about word processing, but you should press them to tell you about the shortcomings of their own system. I've yet to meet a writer who is entirely happy with the system chosen.

Visit computer showrooms. Here you must expect to be disappointed as few salespeople have any idea of a writer's needs. Persuade them to let you try the program out for youself and try putting a good few hundred words in. The simple way to do this is to write one paragraph, duplicate it below, duplicate both those paragraphs and then duplicate them and so on. You will rapidly find out how good the system is at moving blocks of text and you will begin to discover how flexible the system is.

The essential check-list for any word processing program is as follows:

* Is it WYSIWYG or is it an 'editing' program? – you will have to decide which type you want.
* Can it handle unlimited length documents?
* Does it store text to disk automatically (an important safety feature)?
* Are you protected against problems like 'disk space full'?
* Is it easy to move around in the document, i.e. to jump from page 3 to page 54?
* Can large blocks of text be moved around within a document?
* Can blocks of text be moved from document to document?
* Can blocks of text be moved between documents on separate disks?
* Is there a Global facility? If so, is it automatic in its word replacement?
* Are their 'user-function' or 'glossary' keys provided by the program?
* Can a spelling dictionary be integrated with the program?

If you get a positive response to most of these queries, you can be reasonably sure that the program you are considering is

powerful. It is impossible to list all of the various programs which are suitable for writers, but the satisfactory ones I have come across most commonly include WordStar (over half a million copies sold), Perfect Writer, Scripsit, WordPerfect, Leading Edge, MultiMate and Easywriter II (not Easywriter 1.0).

4

Getting It Onto Paper

Hard copy

No matter how many back-up copies of your work may exist on disk, words created by a word processing system don't seem permanent until they appear on paper.

The screen image is just that, an image; an electronic simulation of letters and words that has the appearance of text. It is important to see this image as real while the words are being composed, but few writers feel they can read properly from the screen. If they're going to digest a chapter, they want to do it from paper.

From a more practical angle, printing also represents the only final safeguard for a writer's work. Although spare copies of the disk containing work may have been made, they are not much use when the whole computer system breaks down or when there's a power cut.

The psychological view of electronic text is likely to change as publishers begin accepting manuscripts on disks (see Chapter 9), but I don't think writers will be able to dispense with providing paper copies of work as long as screens are in their present form. Reading from a screen is no match for reading from paper.

The choice of ways to print and the printers on which it can be done is vast and although it is not an area which has previously concerned writers, the use of a computer takes them one step nearer the typesetter. Most users of word processing become interested in the possibilities of print variation as they discover the potential of the technology.

Benefits for writers and journalists

Novelists are likely to require only a straightforward facility to print words out on paper, but the majority of writers outside of this category will be interested to discover that modern computer printers are capable of mimicking typesetting to a limited extent.

Many newsletters are now printed from type prepared on a computer printer Under software control printers can produce text in different type fonts, with a variety of line spacings and with justification of text achieved by a variety of methods. Some word processors are even capable of producing multi-column text, emulating newspaper and magazine formats. These details are discussed later in this chapter.

The flexibility of word processing print increases each year and quality is already good enough to allow quite professional-looking pages to be produced from type generation by a computer printer. The advantages for the writer who is concerned with the production of his or her own work are obvious; the typesetting stage is by-passed and, if the layout of the page is under software control, the paste-up stage of production is also made redundant.

This power has led many writers to produce and publish their own work – usually in the form of magazines or newsletters. Such an innovation is intrinsically good for writers, for social communication and for society itself.

Basic printing

All word processing programs allow text to be transferred to a printer, but the degree of control offered to the user varies greatly from program to program. The most basic word processing programs require the addition of an extra program called a 'printer driver'. This program interfaces with the main word processing program and arranges things so that your text is sent to the printer in a form it can understand. Getting the right connection between word processing program, computer and printer isn't always easy and this subject is covered in more depth at the end of this chapter.

Programs with built-in printing features are usually the more powerful programs and you shouldn't expect to pay extra for a powerful set of printing commands.

The best word processing programs allow the user to print in several ways. In Radio Shack's Scripsit, and most other 'professional' programs, there are three methods. The first is to print from the directory. The user places the cursor against the name of

the document required for print and then presses a 'P' or an equivalent command. The print menu appears on the screen as shown in Figure 1.

Because Scripsit is a friendly program, the user can press ‹ESCAPE› to confirm all of the menu choices and printing will start immediately. The only physical act required is to ensure that there is paper in the printer. The prompts shown on the menu illustrate the many decisions that have to be made before printing takes place.

Any word processing program to be used by a writer must allow printing to take place between specified pages in a document. The first prompt on the menu of Figure 1 asks where printing should start. A writer will often need only the last few pages of a document printed and the starting page is entered in the first prompt. The default value is 'B' for the beginning of the document.

The input to the 'paper size' prompt informs the program when to roll up the paper in the printer to be ready for the next sheet. When continuous form stationery is used, this figure tells the printer how far to advance the paper between sheets to ensure that each page of text is printed between the sheet perforations. The value '66' lines is suitable for both European A4 paper and the American 8.5 inch by 11 inch format.

'Page breaks', the command embedded in the word processing text to order the program to print a new page, often cause problems during printing. If a user starts a document instructing the program that there will be 55 lines per page and then puts 60 on one page, the program will usually print the first 55 lines on a single page and then print the 'hang over' on a new page. This is obviously unsatisfactory and the writer has several choices. These include repaginating the document before printing to ensure pages of the right length (my personal choice) and looking at each page and 'locking' over-long text on the page to ensure it will be printed and not carried over or to cut copy to get the right page length.

Even after repaginating a document it is still possible to occasionally find 'widows'. Widows is a typesetting term and it refers to a single line left hanging alone at the top or bottom of a page. Scripsit and many other word processing programs are clever enough to ensure that any single lines are taken over to a following page, but if I've inserted a space after a line – as I might after a heading – I have to look through the document prior to printing to see if any headings appear on their own at the bottom of pages.

Figure 1.

```
                    ** SCRIPSIT - PRINT DOCUMENT **

 Print from page number (type the number or 'B' to print from beginning):
B_____
 Print to page number (type the number or 'E' to print to end):
E_____
 Paper size in lines (1–99):
66
 Maximum number of text lines on each page (include header and footer):
66
 Column position for left side of paper (1–150):
1___
 Pause between pages (Y or N)?
Y
 Justify by Character or Word increments, Space insertion, or None (C,W,S,N)?
N
 Pitch (10 or 12):
10
 How many copies (1–254)?
1___
 Parallel, Serial, or User-driven printer; DWII Form feeder (P,S,U,F)?
P
 Add line numbers (Y or N)?
N
```

The response to the 'Column Position' prompt in the menu shown in Figure 1 tells the program where the printer head should position itself on the paper for the beginning of each line. Varying this answer allows the user to create specially-positioned text or to ensure that the printing always starts at the same position on a given sheet of paper.

The 'Pause Between Pages' option is important as it selects whether the printer will go on chattering away until the document is completely printed – as it will do with continuous form stationery or when an automatic-sheet feeder is fitted to supply fresh sheets or whether it will stop between pages. If the program stops every time a page has been printed a prompt message will appear on the screen. Scripsit's prompt reads: 'Do you want to print the next page. Y/.N.' When the user has loaded the next sheet of paper into the printer, 'Y' tells the program to continue.

Justification is a big subject and it is covered in detail later in this chapter. The Scripsit menu offers three ways of achieving even left and right margins or the option of having no justification at all.

The 'Pitch' query on the print menu is an enquiry related to the printer in use. Pitch is similar to 'leading' in typesetting and it is the amount of space allocated to the typeface. With daisy wheel printers it is possible to buy print fonts of different sizes and this prompt enables the software to keep track of how the printer is configured.

The 'How Many Copies' option allows the user to specify how many times the document shall be printed. The program works through the pages that are to be printed from start to finish and then starts from the beginning again – according to the number of copies requested. If the program has been told not to pause between pages the program will start printing the document from the beginning without a break.

The 'Parallel, Serial, User Driver or DW11 (Daisy Wheel 11)' are prompts peculiar to Scripsit. The answer to these options tells the program what type of printer is being used and how to configure the program to match it.

The last prompt enquires whether line numbers should be added to the print out. Not all programs offer this facility and it is one I've rarely used, but this facility prints the number of every line – 1 to 55, for example – down the left margin of the page.

As soon as all of the prompts have been answered – either by

default or choice – the user may press ‹ENTER› or ‹ESCAPE› to start the printing process.

The print menu may also be called to the screen while working inside a document and printing then follows the same pattern outlined above.

Special features – print codes

Because text is prepared in an electronic image, there are many printing functions which cannot be displayed on the screen. The most obvious of these is underlining. Very few word processing systems have the ability to show underlined text on the screens because it would require two separate characters, the underline and the character above the line, to occupy the same space on the screen. For underlining, and for special print features such as double-underlining, bold characters and overstrikes, special 'print codes' have to be added when the text is created These print codes tell the printer what it is expected to do.

The usual code for underlining is to add an underline dash at the beginning and the end of the word or section to be underlined. On the screen, the writer would see the four words to be underlined as they appear in the last sentence; on paper, however, it would be printed as: beginning and the end.

The codes used for double underlining vary from program to program. Usually they will be 'invisible' special characters which are created by pressing two keys in sequence – typically the = equals sign is used in conjunction with either the ‹CONTROL› or the ‹ESCAPE› key – and the section to be double-underlined is enclosed with codes before and after it.

Most computer printers can backspace (although not all) and this feature allows **bold** printing to occur. The printer prints a character and then backspaces so that it can strike the same character again.

Advanced word processing programs and printers can print in microspaces and on these systems bold text is created by backspacing so that the character is reprinted slightly off-centre with the first print. This creates a really strong **bold** in the print out. The bold command is turned on and off in a similar way to the underline commands.

Writers have always had the problem of trying to mimic type in their manuscripts. With a computer printer the problem is solved and with a wide range of special print features can be used to clarify

the meaning of the words. *Italic* text can even be inserted in text by either software control or by changing the print face on the printer.

> *Warning*: The ability to insert double underline, bold, italicised and similar special characters in a manuscript can cause the user to get carried away. It is worth saving the bold and italic facilities for words which really need such treatments. As more and more writers find access to word processing, manuscripts are arriving at publishers decorated with a rash of specially-treated words. The over-frequent use of such a facility serves only to confuse the writer's real meaning. Printing power of this type is useful, but it must be used with discretion.

Some writers may want to insert text in their work that they don't want printed out. If you think of ideas during writing that you want to return to for exploration at a later point, the ability to place text on screen that won't automatically get printed out is very useful. A simple 'don't print' command at the beginning and end of such a passage is all that is required to instruct the program to ignore the text during print and if the writer adds a 'flag' to the text, it will be easy to find later. A flag is a symbol which can be found later. It might be an * or @ or anything that is unlikely to appear in any other context in the document. If the symbol is enclosed in the 'don't print' area of the document it will have no effect on print outs, but writers can use the Global Search facility of the program to find the * later in order to insert the text, add the research need or modify the article or chapter in any other way.

Such 'in text' notekeeping is another function unique to word processing. It just couldn't be done with a typewriter. There are occasions when such a feature is useful and in practice most writers who keep notes on the screen, clean the document up by removing them and re-paginating before printing.

Putting a printing stop in the middle of a document is a useful feature. If a 'stop code' is embedded in the text the word processing program will halt during printing when this stop is encountered but

the printing process won't terminate, it will simply be suspended until the user tells the program to continue from the print monitor. Putting a stop in text allows the user to change a print wheel to alter the typeface. If, for example, italicised text was required in the print out a stop code would be placed at the beginning and end of the section to be italicised. When the printing stops, the typeface is changed and printing is continued. When the printing stops again the typeface is changed back to the original. There is one important rule about print codes: *there must always be two*: one at the beginning and one at the end of the section concerned. If there's only one underline code everything following that code will be underlined. Some word processing programs are clever enough to spot when an odd print code has been added and they warn the user. Scripsit isn't and I regularly forget to add the closing print code and end up having to stop the printing, adjust the page in question and re-start.

Advanced printing

Advanced word processing programs allow multi-column print outs to be prepared. Typing a page with a narrow format, perhaps 35 columns wide, causes a narrow column of type to be printed which corresponds with a column of newspaper or magazine type. The print control code 'top of the form' orders the printer to roll back the piece of paper currently in the carriage and to begin printing at a margin position determined by the user. In effect, this allows two or three running columns of text to be prepared on a page. If the system has a daisy wheel printer and if high quality justification is allowed by the word processing program, such a page can be printed, reduced (usually by about 50 per cent) and used as art work for a magazine or newspaper. The results can be of very high quality indeed and journalists involved in newsletter production would find this function extremely useful.

Good printers and programs are capable of producing many characters not normally found on typewriters. The characters available are limited by the word processing program and the printer's flexibility. Dot matrix printers are usually able to create any special character demanded by the software, but many do not have the ability to backspace. Backspacing is important when a 'two element' character is required. Examples of such characters are the à and the ç.

Different word processing systems use different methods of allowing the user to define keys to produce special characters but all systems base such operations on a code known as the ASCII (pronounced 'as-key') code. ASCII code was developed to create a standard for computer information interchange and every lower case and capital letter, as well as every numeral and punctuation mark is assigned a code. A good word processing program should allow the user to enter special codes which can be called by programmable keys.

Background printing

'Background printing' is one of the most important features to look for when choosing a word processing program. It is infuriating to find that the computer is totally tied up with a long printing task and a background printing, or 'spooling' feature allows printing to continue while the user gets on with another task. (Spool is an acronym for 'Simultaneous Peripheral Operations On Line'.)

For background printing to become possible, the computer concerned has to have spare RAM capacity or it has to be fitted with a separate piece of hardware called a 'buffer box'. In practice, the spooling operation takes the text which is to be printed and stores it in a memory buffer from which it is fed to the printer. The rest of the system is then freed to carry out other tasks. A fairly small microcomputer – perhaps with 48K of RAM – may not have sufficient memory capacity to be able to store text for printing and run a word processing program at the same time. In this instance the separate buffer box becomes the only alternative.

There are many independent manufacturers selling buffer boxes and they consist of a few memory chips which accept and store the text which is to be printed. The buffer box then takes over the job of feeding the text and control codes to the printer at a speed which suits the process, leaving the main computer free for other work.

With a larger machine, 64K and upwards, this buffer can be temporarily created in the computer's main RAM. The software 'cordons off' a section of computer memory and this is used to store text for printing. The computer's CPU operates so quickly that it is able to direct the passing of text to the printer and attend to the new task in hand at the same time with only a minimal loss of efficiency.

I am editing this chapter while my revised and edited Chapter 3 is running out of my printer. Although I use a relatively low-powered micro (64K), the Scripsit word processing program is powerful enough to allow me to get on with more work while printing is taking place.

Most typists would be able to tell when background printing is underway (and an internal software buffer is internal) as there is a slight lag to some of the screen operations caused by the multitasking CPU. This drawback is minor, however, and when I'm printing a long chapter out I'm pleased to be able to get on with the task of editing the next. In practice I find that the attention I have to pay to the printer, and the noise it makes while printing, stops any origination, but as it can take half an hour to print a chapter, the time saving is considerable.

A dot-matrix or a letter-quality printer?

The two basic types of computer printer likely to be used by a writer are the 'dot-matrix' printer or the 'letter-quality' printer which is often called a 'daisy-wheel printer'.

Although there has been much discussion and speculation about the 'paperless' office of the future, most experts estimate that the installation of a word processor actually increases the amount of paper generated in an office. The writers I have interviewed agree with this and the consensus of opinion is that the introduction of word processing into their work routine has increased the amount of paper generated *five fold*! The reason for this is easy to understand; the flexibility of the system makes editing easy and many more intermediate drafts are printed than would ever exist if each had to be typed manually. Because a printer in a word processing system has to work hard, it is important to choose it carefully.

Dot-matrix printers create characters on paper by pressing a matrix of wires onto the paper through a ribbon. The shape of these characters is controlled by software. It is easy to tell when a document has been printed on a dot-matrix printer as the type resembles screen text and is made up of connected dots.

A few word processing programs work with dot-matrix printers

to produce text in which there are no true descenders. As explained in the discussion on computer screens in Chapter 2, descenders are the tails of the p, q, y, etc., and on all good screen displays and print outs, these tails fall beneath the line. Some 'economy' printers try to emulate descenders within the margin of normal characters and these produce text which is very difficult to read.

Although a dot-matrix printer will not produce text which looks as clear as that produced on a letter-quality printer, dot-matrix technology is improving each year. The quality of the type they produce is governed by the number of 'pins' in the printer-head matrix. The standard number is 7 × 5 but better quality printers use a matrix 16 × 9 to produce a far clearer typeface.

Equally, we are all getting more used to reading computer-style print outs and editors in publishing houses and on periodicals are losing their prejudice against 'computer copy'. As reliable high-speed letter-quality printers cost approximately twice what a good dot-matrix printer can be found for, I would certainly opt for a dot-matrix printer if I were installing my system today. A typical dot-matrix printer costs between £250/$400 and £400/$600 and a high-speed letter-quality printer is likely to cost around £1,000/$1,500.

Dot-matrix printers have one important advantage over even the most expensive letter-quality printers. They are much faster. The best dot-matrix printers can print up to 200 characters per second and allowing an average of 6 characters per word, it is easy to calculate that they can print 2,000 words per minute. It is doubtful whether any writer needs this sort of speed, but long manuscripts do seem more digestible when tackled at this speed. Even 'cheap' dot-matrix printers can produce 1,000 words a minute.

Letter-quality printers are much slower, but most writers who can afford to do so opt for their superior type impression

Warning: The cost of letter-quality printers was falling sharply as this manuscript was prepared, but examination of the market reveals that these 'cheap' daisy-wheel printers are very slow – typically 15 cps (characters per second) *at average printing speeds*. At this speed it would take well over an hour and a half to print out a standard 10,000 word chapter. Low-price letter-quality printers are often advertised as offer-

ing higher 'maximum speeds', but these rarely bear any meaningful relationship to normal printing speeds. The minimum speed to look for in a printer is 30 cps.

The cheaper daisy-wheel printers are also less reliable than the more expensive letter-quality printers and, faced with a tight budget, I would opt for a professional dot-matrix printer rather than a cheap letter-quality printer.

There are two popular systems for producing letter-quality print. The first uses a 'daisy-wheel', a system invented by Diablo in 1972. This flat, spoked wheel (three inches in diameter) resembles the head of a daisy and two characters are printed on the end of each petal.

The wheel spins and the required petal is impressed on the paper through a ribbon. The daisy-wheel printer can produce up to 50 characters a second – 500 words per minute – although most models work at between 30 and 40 cps. The system the daisy-wheel replaced – the IBM golfball – could operate (under manual control) at a maximum of 15 cps.

A second system of producing letter-quality type is called a 'thimble' printer. This is very similar to a daisy-wheel system, but the type font looks like a thimble and it turns on its axis to present the required character to the paper.

Print wheels can be purchased in either metal or plastic. Metal print wheels last much longer than the plastic versions, but I'm not sure that any single writer could produce enough text to require such longevity. My principal print wheel must have produced several million words and it shows no sign of wearing.

All print wheels need cleaning after extensive use and this is akin to typewriter cleaning. Special kits are available for print wheel immersion, but the typewriter dodge of using an old toothbrush and some meths works wonders. Make sure the print wheel is cleaned well away from the printer.

As a last resort, it is possible to buy interface units which will connect microcomputers to electronic typewriters. The drawback with such a hook-up is that typewriters are slow and they are much less robust than computer printers. Although this might work as a 'make do' measure, it is not to be recommended for extended use.

The printer is likely to be the least reliable part of a word

processing system. This is simply because it works so hard physically. I've been very fortunate with my Radio Shack daisy-wheel II as it has turned out acres of text without faltering, but several writers to whom I have spoken have described the printer as the weak link in an otherwise reliable chain.

There is one other type of printer now appearing on the market, called 'ink jet' printers. These printers have been developed for professional computing use and they form characters by spraying a fine jet of ink at the paper and forming a specific character under software control. The type image they produce is of a very high quality and they work at lightning speeds. The drawback is that they are still very expensive and beyond the average writer's pocket and needs.

Ribbons

Ribbons are an expensive part of word processing. Because the system generates five times as much paper as a manual system, the ribbon takes a pounding. Ribbons for computer printers are sold in cartridges peculiar to particular makes of printer and on days when the bank statement arrives it occurs to me that I should give up writing and go into the manufacture of computer-printer ribbons. After two years of watching money stream past the print head, I have now evolved a fairly economical way of using the system.

There are two types of ribbon available for most printers; fabric and carbon. The carbon ribbon is a thin film of plastic coated with a carbonised ink. This type of ribbon can only be used once and as my ribbons cost nearly £5/$7.50 each, I only use them for letters and delivery manuscripts. The rest of the time I use an endless fabric ribbon. Fabric ribbons leave a fainter and less sharp image on paper, but I persuade mine to go on for months and I don't mind putting up with faint print outs on drafts in order to save money.

Typefaces

A wide variety of typefaces is available for computer printers and the writer who is at home with word processing will certainly want to experiment with varying the appearance of copy and manuscript. Dot-matrix printers vary their type styles under program control and the flexibility varies according to the program in use. Type wheels for letter-quality printers are available in a variety of type-

faces and pitch sizes. Pitch size determines how much space is allowed for each character on the paper. It is not the same as type size, although the size of text is varied according to pitch.

The print wheel supplied with a letter-quality printer may not provide the best or clearest appearance for your work. Some faces look excellent when a page is made up of single-spaced text and less good when it is double-spaced. It is certainly worth buying an extra print wheel or two if only to ensure that a spare is available should a print wheel break.

It is always worth adding an italic print face to your collection as it is useful for printing quotes in a body of text or for delineating sections. I find it far too much trouble to use an italic wheel for printing the words I want to be italicised in the final typesetting. Stopping and starting a printer before and after a single word is a time consuming and fiddly business and I much prefer to underline the words I want italicised.

Paper feeds

The choice of paper and the method used for feeding the paper is quite important in computer printing.

Dot-matrix printers are invariably delivered with 'tractor' spokes fitted at each end of the paper roller. These spokes locate in corresponding holes in continuous form paper and ensure that the paper is pulled through the printer evenly.

Letter-quality printers are usually delivered without tractor feeds and with 'friction-feed' rollers that resemble ordinary typewriters. The makers of letter-quality printers are all ready to sell tractor feeds at extra cost, but I'm not at all sure that they are necessary.

I would recommend the use of continuous computer paper to all writers. It comes in packs of 2,000 sheets with fine perforations between each sheet and with tractor location holes at each side, also contained within perforated margins. Surprisingly, continuous form paper is actually cheaper to buy than the traditional flimsy, onion or 'bank paper' so beloved of writers. It is possible to use continuous form paper in printers without tractor feeds, but I find it necessary to keep an eye on the process as the paper twists and runs out of alignment every so often. This is something I can live with. Another drawback with using continuous form paper is that it is impossible to take carbon copies. Continuous form paper can be bought with self-carbon layers, but it is expensive in this form.

Since using word processing, however, my need for carbon copies of manuscripts has disappeared. The security copy of the text is held on disk and if I really want another copy of the text, the options are to print the work out again or photocopy the first print.

It is possible to buy cut-sheet feeders to deliver single sheets of paper to the printer. These are not only expensive, they are a nuisance if you want to print a single envelope – they get in the way. It is even possible to get an automatic feeder which will slide envelopes into place for printing, but I don't think too many writers would require that facility.

Printer interfacing

Interfacing is the art of getting a matching connection between discrete components. If you buy a package system (as most writers seem to do) interfacing problems will have been taken care of, but if you're an adventurous soul and buy separate components you will have to exercise great care when selecting 'foreign' printers to work with your micro or word processor.

Accepting a salesperson's bland assurances that 'they work perfectly together' isn't the way to be safe. Writers are hard task masters for word processing and it's easy to find that although a printer can produce text from a system, it may not be able to create special characters, to print in bold type or to do some of the other specialist things required. Additionally, word processing programs are choosy about the printers they support. If you are determined to buy a printer other than the models supported by your word processing program, you may have to add an additional program to the system to complete the interface.

The Scripsit manual blandly states that if a user wants to run a printer other than those supported within the Scripsit program 'someone who understands assembly language programming must create the printer driver'. Such people are not easily found. Beware!

The need for good advice about interfacing problems has been recognised by a British dealer, Micro General.

Advertised as an 'Interface Consultancy', the company offers a service which advises about interface buffers, cables, sockets and printer switches and will supply interface kits to mate most printers with most microcomputers.

Micro General,
Unit 25,
Horseshoe Park,
Pangbourne,
Reading RG8 7JW
UK.
Tel: 07357 4466

5

Getting Comfortable

The arrival of a computer has a profound effect on a writer – which is why some successful writers choose not to allow one in. The whole method of working alters to accommodate and to take full advantage of the computer. Writers may even change the way they think about writing as a result of using a computer. Important elements to consider are where to situate your new computer, how it will fit into your work pattern and how to safeguard yourself against its possible dangers. Taking a computer into your life is a little like taking on a new partner.

Habitat is important, both for the computer and the writer, and any possible hazards to health and safety must be considered.

Eye-strain

Whenever writers consider getting a computer the question of eye-strain (and even radiation) arises. In Chapter 12 Terence Feely reports an increase in headaches since he's been using his system and research that has been done on the problem suggests he may not be imagining them.

According to America's National Institute for Occupational Safety and Health, eye-strain is a problem which affects eighty per cent of all office workers who use computer screens. This is not an insoluble problem nor a real health hazard, but it should act as a warning to all writers who fall in love with their computers. Thankfully, eye-strain and the associated disorders of headaches and tiredness can be avoided by commonsense precautions. Radiation contamination is simply a problem which does not exist. The level of ionising radiation from a computer screen is lower than

that from a domestic TV. There is no danger of any emission from a computer screen. Eye-strain may affect some writers, however, and Len Deighton has suffered conjunctivitis which he ascribes to his hours at the screen. He now rations his use of word processing.

Like any other muscle, the eye muscle becomes 'fixed' if it is not exercised. Until the advent of computer screens, typists were forced to change the focus of their eye every so often when they put a new piece of paper in their typewriter, when they reached for their correcting fluid or when they looked out across the paper at the office beyond. The same was true of writers.

With a computer screen, the word processing program automatically provides the blank pages and the need to look away from the screen's focal plane is removed. For those writers with long concentration spans it allows endless hours of work to take place in which the eye is focused only on the computer screen. This causes a problem called 'accommodative lock'. This means that the eye becomes 'fixed' at one focal length and when the writer (or typist) eventually looks up, the eye momentarily has trouble re-focusing. It is this problem which leads to eye-strain and, perhaps, headaches.

The solution adopted by the unions who represent office workers provides a sensible lead for writers to follow. Agreements differ from country to country, but most authorities agree that short rests away from the screen are sufficient to cure the problem – breaks as short as a couple of minutes in every fifteen solve the problem. For most writers *the problem won't exist* as the user needs only to look away from the screen into the middle distance for a couple of seconds for the eye to re-focus and the eye-muscle to be replenished with blood and oxygen. Most writers I know continually look up to think, to answer the phone, to look up a reference or simply to escape work. If, however, you are a writer who becomes 'fixed' in your work you may have to set an alarm or a timer to remind you to look up and away from the screen every fifteen minutes or so: look out of the window or across the room for a moment and the problem will be solved. (Medical advice suggests that the eye should re-focus on an object at least twenty feet away if you do stare at the screen unremittingly.)

If you have a sight impairment, working with a computer screen may show it up more sharply than working with a typewriter. If you are concerned about this aspect of computerization you should have

an eye test before you start working with a computer and you should ensure that if you wear glasses they suit your eyes in their current state and they are of the right focal length for the computer screen.

There are practical ways in which you can reduce eye-strain from computer screens. Without knowing why, I chose to work in a semi-darkened room from the moment I installed my computer. I have since discovered that low lighting is generally favoured for workers who use computer screens for long periods, but it was an instinctive reaction on my part. I chose to work in a room with the blind half-pulled. This allows me to turn down the screen controls governing both brightness and contrast until the screen display is fairly dull – it is hard to read it with the blind up and full daylight in the room.

Few writers will find the idea of writing in a semi-darkened room off-putting. Even before Tom Sharpe went back to using his word processor he used to put a sack over the window of the garden shed in which he works 'to stop me looking at the bloody garden' and Terence Feely also chooses to work with a blind pulled. Despite the fictional image of writing, most writers really don't want a view to stare at. It is far too distracting.

Make sure that any computer system you buy has controls for altering the brightness and contrast of the screen. This will allow you to adjust the lighting conditions as you wish. Avoid harsh overhead lighting or lighting from behind you – this can cause reflection and glare on the screen. If you do find glare a problem there are several things that can be done.

Most computer screens are supplied with a display that offers white characters on a black background. Some people are perfectly happy with this, but research in Sweden seems to suggest that either amber or green displays are most restful. I have added a green screen filter to my computer and although I have worked very long hours at the screen for several years I have felt no eye-strain other than that attributable to over-work.

Green and amber filters or screen covers are available for most makes of computer and if the manufacturer doesn't supply a filter as an extra, there will almost certainly be one available from a third-party manufacturer. You might consider adding a Polaroid screen if glare is proving to be a problem. Polaroid make a contrast enhancement filter for computer screens which is supplied with velcro stickers. This allows it to be attached to almost every type of computer casing. The filter incorporates a circular polariser

which improves the contrast of the screen while eliminating the reflections of the surrounding environment.

A few expensive dedicated word processors offer black type on a white background. This can be a very good system of display, but the quality of the cathode-ray tube has to be considerably higher than if the type is white on black. I believe that all such tubes in dedicated machines are of high quality, but this is one element which adds to the price of a dedicated machine.

Some advanced word processing programs make use of colour to help with differentiation of text, etc. In general it is much harder to get a good colour display than it is to get a good black and white picture. The danger is that the guns which fire the electrons to activate the various colours are easily shaken out of synchronisation and this causes a 'furry' image to appear. This can definitely cause eye-strain.

It is also important to ensure that the computer screen display *does not flicker*. A few years ago there were a few microcomputers available which were very bad in this respect, but in the last few years all the manufacturers seem to have realised how important this aspect is. If you are buying an American machine for use in Britain (or vice versa) make sure that it has been properly converted *from 60Hz to 50Hz (or 50 to 60) operation*. It is possible to run an American-built machine on a 240 volt/50 hertz power supply without altering the frequency of the screen display. The result is a flicker. When the Scripsit Word Processing program is installed on a Tandy/Radio Shack computer, for instance, it is necessary for the user to run a short program called 'HERTZ50' to modify the screen display for 50Hz operation. Even when examined closely, the computer screen should not flicker.

It is also important not to allow the computer screen or covering filter to get dirty. I use an anti-static solvent to wipe the screen down every week or so and this keeps most of the dust off. A grimy screen can soon cause a fuzzy display and if you do let your children play games on your computer when you're not using it make sure they wipe their finger marks off the screen when they've finished.

One last subject that needs to be discussed before leaving the topic of eye problems is photo-sensitive epilepsy. This is a rare form of the disease affecting very few adults, but if there is any tendency to photo-sensitive epilepsy in your medical history it is worth attempting to establish the frequencies at which you are

sensitive and then compare them to the screen display frequencies. Most photo-sensitive epilepsy occurs at around 25,000 hertz and computer displays are nearly always on a higher frequency. But it should be checked if you suffer from this rare complaint.

Where to put the computer

If you are fortunate enough to have a separate room in which you work, this question will largely concern the position of the computer within the room and the desk height, etc. If you have to write in the family living room, the kitchen or in some other shared space you may not have much option about where you put the machine.

If you have a choice, place the computer on a large table (rather than a desk) at 90 degrees to the window and at some distance away from it. This may not be possible, but at all costs try to avoid siting the computer so that a window is directly behind you when you are working at it. Even with a blind pulled, a chink of light can cause distracting reflections in the screen.

I suggest the computer is used on a large table rather than a small desk simply because you are likely to have several things to spread out around the computer. These will include boxes in which floppy disks are kept as well as the usual writer's paraphernalia of dictionaries, reference books and note pads.

I have opted for a two-desk layout, or rather a table and desk layout. This provides me with a 'computer station' and a normal desk at which to write letters (by hand) and read, etc. A computer can't be easily moved as it tends to dominate the table on which it is placed leaving room for little else and I choose to work in a 'galley' layout in which I can swing round on my chair and work at either computer or conventional desk.

The actual height of the desk or table you choose to site your computer on doesn't matter too much, but the relative height of the screen, the keyboard and your eye matters a great deal. It is important that you should choose a computer which has a detachable keyboard. Most have these days, but it is still possible to buy a machine with a fixed keyboard and these cannot be designed to suit people of varying heights nor to suit varying focal lengths.

It is also extremely useful to have a screen which can swivel or tilt, although this is not as important as having a detachable keyboard. If you can touch-type you are likely to want to have the screen at eye level and the keyboard lower down. If your typing is poor – as mine is – you will want the keyboard sited fairly close to

the screen to allow your eye to flicker back and forth between keyboard and screen.

It is vital to have a good chair – just as it is when using a typewriter. A lot has been written about posture chairs, and the experts seem to be in disagreement about some of the aspects. It is clearly important to have good thigh and lumbar support and this can eliminate many of the back problems which plague typists.

I must admit to having developed a back problem as a result of having introduced a computer into my work. It was not caused by lifting the machine out of its box, but it is a form of muscle pain in the upper back usually referred to as 'typist's back'. I've tried a variety of chairs and seating positions over the years, but I haven't found a cure. Doctors suggest that stress is a factor and this is something that the seating position can't deal with. Although I suggest a link between the arrival of my computer and the onset of back pain, I think it is more likely that the link is indirect: I am now spending more time sitting in one position at the computer than I used to spend sitting at the typewriter. Corrections which were formerly done on paper – perhaps sitting on a sofa – are now done at the screen and the body gets less chance to flex its muscles. (Note: I must exercise more.)

It is a surprising fact that a writer who has contentedly put up with less-than-perfect conditions for years while working in longhand or with a typewriter will suddenly start re-arranging and questioning everything about work habits after a computer arrives. This is because the computer brings a new approach to an old problem and helps us to see it afresh. The new light shed on work habits can be quite far-reaching and within a few months of switching to a computer a writer is likely to have re-organised desks, books, files and the entire office. To some extent, the discipline of the computer itself rubs off. The extreme efficiency of a computer system almost demands that the user responds in similar manner. I have certainly found a 'transference' (as educational psychologists would describe it) from the disciplines of running a computer system to the other areas of my life. All for the good, I think.

Some computer manufacturers try to sell special computer desks or 'work stations'. These are usually well-designed but rather over-priced and unless you are facing an embarrassing surplus in your financial year, I think such things can be easily dispensed with.

One very necessary extra when a computer is in use is a copy holder. The vertical angle of a computer screen makes it difficult to copy-type or to correct from paper at desk level and an almost-upright copy holder to the left or the right of the screen improves things enormously. These are available commercially or, if you choose, you can make your own.

I also use a fairly high footrest under my computer table and I've noticed that a lot of other long-distance computer users do the same. I've found that it improves the comfort of the position and I'm told that by lifting the thighs, less strain is placed on the hip-joints and the lower back. Many typists also add wrist-support pads to the front of computer keyboards so their arms don't get tired. I think that is something appreciated more by trained typists who keep their wrists up – rather like pianists.

Keyboards

Apart from the screen, the most important ergonomic element in a computer system is the keyboard. Most writers who have used typewriters will be used to the 'touch' of their favourite machine and selecting a computer keyboard to replace it is no easy matter.

Apart from the problems of keyboards on cheap computers – discussed in Chapter 11 – there are several aspects of keyboard design worthy of comment.

During the 1960s IBM pioneered the 'sculpted' typewriter keyboard; i.e. a keyboard with a concave profile and keys which tapered slightly to minimise the chance of fingertips catching an adjacent key. This has since become a standard in typewriter keyboard design. Computers developed differently and used a 'flat' keyboard. Today some computer manufacturers offer the sculpted keyboard and some offer flat versions and, to an extent, this reflects a manufacturer's commercial or data processing background.

To writers used to banging about on old manual machines – or even on older electrics – either will be a revelation and the most difficult task will be adjusting to the light touch of such keyboards. Heavy banging can cause 'keyboard bounce', a condition in which letters automatically repeat. Some systems provide an artificial 'key click' which announces when contact is made, others are totally silent. Which type of keyboard is best for you must be a matter of personal preference, but typists switching from old manuals seem to prefer flat keyboards while users of electric typewriters are at

home on the sculpted version. The two important points to remember are that the keyboard must be detachable and it must be a keyboard designed for typing (as against the cheap 'computing' keyboards described in Chapter 11). Keyboards aren't usually interchangeable between computers so you may find that you have to make a trade-off between good and less-good features in a system that suits you in general. The keyboard is something that you'll be pounding every day, however, and it is important to feel comfortable with it from the outset.

The printer location

Printing is an operation that will be conducted almost every day once a word processing system is installed and for this reason it is worth giving some thought to printer installation.

The worst thing about printing is the noise it makes. Some printers are noisier than others – the daisy-wheel makes more noise than a dot-matrix printer for example – but all are noisy enough to intrude on thought. The concept of 'background' printing was discussed in Chapter 4, and this system of allowing writers to print out one document while working on another suffers from the drawback of the noise generated by printers. Trying to work on Chapter 2 while printing Chapter 1 is an attractive idea, but the printer can be so noisy that clear thought isn't possible.

Another reason that printer noise can be intrusive for the writer is that he or she is likely to want to locate the printer close at hand. It is often necessary for a writer to run out a single sheet and it isn't much good if the printer is located in a different room. In professional computing situations, the printer is often located in a special printer room where it is fed with continuous fan-fold paper and left to its own devices. Such an option is not practical for the home-based writer.

Printer noise can be reduced in several ways. The first rule is to place the printer on the most solid base possible. Because it works at high speed, a printer will set up considerable vibration. *Be sure that the printer does not occupy the same table as your main computer*, the constant vibration could cause a circuit board to shake loose. Rubber mats under printers can also help to reduce noise, but the ultimate solution is, as is so often the case, an expensive one. Acoustic hoods for printers are made by many different manufacturers. Some are 'fit-all' types, others are built for specific models of printer. They all work well and can reduce

printer noise considerably. I doubt whether many writers would find acoustic hoods cost-effective and I've certainly learned to live with my printer. I still get a thrill out of seeing the words spew forth.

Power consumption

With a computer, disk drives and printer plugged in the writer might be forgiven for expecting electricity bills to rise steeply. This won't be the case. Computers use very little power and even when the entire system is switched on for most of every day the difference in the monthly or quarterly power bills is likely to be only a few pounds or dollars.

Heat can be developed by a computer system, however, and this can be a problem in a small room in summer. Good ventilation or air-conditioning is the obvious answer, but it is important not to let the air in which the computer lives become too humid.

The days when a computer system required a specially controlled climate in which to function have gone, but three enemies remain and these are capable of destroying disks and interfering with computer activity.

The first is dust – a commodity likely to be found in most writers' homes. It is worthwhile slipping a plastic cover over the computer system when it is not in use – just as you might have done with an electric typewriter. After a few years dust can cause problems inside electronic circuits and it is sensible to delay such problems for as long as possible.

The second is humidity. This attacks both disks and circuits and it can cause disks to become corrupted. They can be protected by careful storage and the computer cover will keep the worst of the moisture out when the system is not in use.

The last problem can be quite difficult to cure. Static electricity can cause real problems with some machines. If you have a close-carpeted room in a dry atmosphere the floor is likely to build up a static charge of electricity – sometimes up to 5,000 volts. Many machines are now insulated against such shocks, but some brands are not and it is possible to upset RAM and lose work by touching a machine when charged with static.

The solution to this problem can be tricky. Special static-control floor mats are available which can suck the charge from the writer's feet (placed beneath the writer's chair) and anti-static sprays can reduce the negative charge of electrical equipment. The simple

expedient of touching the desk-top before the machine can also lessen the risk.

Beware of vacuum cleaners: if floppy disks are left anywhere near an area where a Hoover or floor polisher are likely to be used the electrical field can corrupt data on disk. For this reason remember to store disk boxes on a high shelf.

Planning for the future

As writers become more familiar with computers most will undoubtedly want to take advantage of their research power and ability to network. For this reason it is sensible to site the computer fairly near to a telephone terminal or to have a new telephone point put in. It is also possible to use a 'dumb' terminal with most computer systems and the writer with a large house may choose to wire the main computer so that a second terminal can be connected in another room or in an adjacent building.

For All Bad Typists (and Spellers)

Some writers cannot type, and many who can type do so badly. Writing with computer aid necessitates typing and brings with it a complete change in working habits.

Some writers type out their own drafts and then hand over their manuscript to a professional typist to produce a clean final version. Some writers don't feel that the final appearance is all that important - Hunter Davies, for example, thinks re-typing is unnecessary and supplies his *Punch* articles with handwritten corrections - but in order to reap the benefit the computer has to offer, the writer has to master the skill of typing.

Special Systems Industry, a Dutch company, has developed a new keyboard that will make inaccurate typists drool. Called the 'Velotype', the keyboard is said to be capable of up to 1,000 characters a minute (the present world typing speed record is 683 characters) and it makes use of a microprocessor *to correct transposed letters*. At high speeds even the best typists can occasionally jumble letters to write 'ign' instead of 'ing'. The Velotype microprocessor reads all 'strings' of characters entered and re-arranges commonly mistyped strings into the correct order. The keyboard facilitates ultra-high speed typing by using a syllable keyboard rather than single characters. The keyboard is arranged in three fields which contain the consonants at the beginning of a syllable, the vowels and the consonants at the end of a syllable. Philips and AES are now offering the Velotype keyboard as an option with their dedicated word processors.

The freedom of word processing makes it closer in concept to longhand than to typing and some non-typists will undoubtedly start using a computer. When Ralph Steadman bought a Tandy/Radio Shack Model II he had never typed in his life, but he was starting work on writing a musical and he recognised the power the computer offered him.

I must admit to being a poor typist and an indifferent speller. I find that my mind usually runs way ahead of my physical ability to get words onto paper or onto a screen and the result is usually a terrible mess.

Word processing was designed to fulfil the bad typist's fantasy. Theoretically, the poor typist can let the words stream forth, uncaring about the errors. The machine is more than able to keep up with even the fastest typing speeds and it would seem logical to complete a passage of writing and only later go back and correct all the misspellings and mistypings. In practice, I can't bear not to correct a mistyped word when I see it. I am constantly darting back to the previous sentence to delete an unwanted letter or put in a missing one. I clean up as I go.

The use of word processing doesn't automatically make anybody a better typist. The keys on most computer keyboards are very sensitive and to the typist weaned on the old manuals of the newspaper office, they seem to produce characters almost by themselves.

Typing tutors

For non-typists who want to learn the skill and for writers who want to improve, the computer which is to be used for word processing is capable of running a complete course of typing tuition.

Because of the interactive nature of computing, typing trainers on computers are *much* more effective than any other teaching method and even non-typists can gain a basic proficiency on the keyboard within a few hours.

One example of such tutors is 'All Fingers Go!', a program written for the British BBC Microcomputer. This program is designed to teach ultra-fast touch typing and it consists of eighteen lessons which utilise a moving diagram of the keyboard on the screen to indicate precisely where the pupil's fingers should be placed on the keyboard. After each typing exercise the program provides reports on word speed and the error count and in the later lessons the

program automatically provides exercise sentences which contain words the pupil has found more difficult to type.

'All Fingers Go!' is available from:
National Extension College,
18, Brooklands Avenue,
Cambridge CB2 2HN,
UK
Price is £14.95 for a cassette-based program and £28.75 for a disk-based version.

Another example is 'Hypertyper' – a program developed to run on the IBM PC, the Apple II, the Osborne transportable microcomputer and most other computers which operate on 5.25 inch CP/M disks. This program also trains typists in the correct finger positions and provides exercises to speed up accurate typing.

'Hypertyper' is available from:
Digital Marketing Corporation,
2363, Boulevard Circle #8,
Walnut Creek,
California CA 94595,
USA.
Price is $49.95

Spelling checkers

When I first discovered that I could buy a program which would read through an article or chapter that I had written and check my spelling I found it hard to believe. As I'm a shaky speller it sounded too good to be true and I went to enormous lengths to import a program and 'patch' it into my Scripsit word processing program. It worked! I was in a state of rapture for weeks.

That was in 1981. Today I use Scripsit's own spelling checker and hyphenation dictionary which I consider to be one of the best available. The first spelling checker I used contained a dictionary, or more accurately a lexicon, of 40,000 words. My present program contains 100,000. Few errors get past that.

The way a spelling checker works is simple. When a document is finished, the program scans it word by word and compares the 'text strings' to strings stored in a dictionary. Each time a string is found which doesn't have a match in the dictionary, the word is logged in the program and put aside for later production. At the end of the 'pass' the spelling checker program can do several things with the words that have not found a match. The simplest thing to do is to display a list of those words on the screen. If the user makes a note of them, he or she can then go into the document and, using the global search facility that is found on most word processing programs, find and correct the offending words. This is the least friendly form of spelling checker program.

The best programs save the unrecognised words, return to the document in question and highlight those words *in context* giving the writer the chance to change them on the spot or leave them as they are. These programs are marvellous in use and, providing the dictionary is a good one, are an absolutely invaluable aid.

With a wide variety of spelling checkers now on the market, the choice of the right program hinges on an understanding of how such programs work. Speed of operation is one important consideration and some writers on the subject of word processing advise against the installation of a large dictionary on the grounds that it will take a long time to check each word against a long dictionary. This is not necessarily true. The speed of a program hangs on two things; the program design and the efficiency of its coding. A well-designed program which contains a 100,000 word dictionary will operate much faster than a poorly-designed program with only a 20,000 word dictionary. A microprocessor works so quickly that the volume of words to be scanned is not the problem, the problem is in designing an efficient program.

My Scripsit dictionary can read a 10,000 word chapter in seven or eight minutes. My earlier program took much longer. Small dictionaries are almost useless. Terence Feely (see Chapter 12) is an excellent typist and speller and he never uses SpellStar, the 20,000 word spelling checker which was supplied with WordStar. He found that the program was always highlighting correctly spelled words just because they weren't in its limited vocabulary.

Occasionally, spelling checkers are incorporated as part of the main word processing program, but more often they are sold as a separate program. It is important to discover whether this separate program can be integrated with the main word processing program.

Some can't and the only way to use these is to copy the text file onto the disk which holds the spelling checker program, run it and make the corrections, and then copy it back onto the word processing disk. This is time-consuming and laborious and this should only be considered if you are stuck with a hardware or program configuration which allows no other option.

The best method of accessing a spelling checker is to have it available while working on a document. The dictionary may be stored on the same disk as the word processing program, but more usually it is held on a separate disk which is used in an adjacent disk drive. The reason for this is shortage of space. Good dictionaries take up a lot of disk space. With eight inch disk and a 'compressed' dictionary it is possible to squeeze both spelling checker and word processing program onto the same disk, but there won't be much room left for text storage on that disk.

The amount of room a spelling checker program takes up on disk doesn't only depend on the amount of words contained in the list. It also depends on whether the dictionary is created as a 'literal' or a 'root' dictionary. A literal dictionary is what it sounds, a list of fully spelled words against which text strings are compared. This is the most reliable form of dictionary as there is little room for error. (Surprisingly, many dictionary programs arrive with misspelled words! These are revealed when common words are frequently thrown up as being incorrect by the program. The user should be able to add the correct spelling to the dictionary and, in some programs, will be able to find and erase the incorrect entry.)

A 'root' dictionary works by specifying the roots of words and then setting down rules for prefixes and suffixes. A dictionary written under the root system can pack many more words onto a disk as one entry with rules governing its use will replace many words in a literal dictionary. The problem is that unless the program is very well written, the rules for adding 'ing' to 'garden' or 'ed' to 'pass' may not work properly. When a root program is well written it provides the very best form of dictionary as it is both fast and accurate, but the majority of root dictionaries are far from perfect.

If you're thinking of buying a spelling checker program it is worth taking the time to create a document with a mass of misspellings in order to see how efficiently the program works. No program will catch every misspelling, but the program should always err on the side of caution and show up any 'suspect' words.

Proper nouns are not contained in any dictionary, nor are highly

technical words. For this reason, a good spelling checker program must have the facility to allow users to add their own words to the dictionary so that frequently used proper nouns or technical expressions are not always highlighted. Ideally this feature should be automatic. When a word is shown as being incorrect when, in fact, it is either a proper noun or specialist word, the user should be able to command it to be added to the dictionary before moving on to judge the next word which the spelling checker has failed to recognise. Programs vary in their friendliness in this respect. A few operate as above, but many require the user to type out a special list of words which are to be added. The ability to review the 'user dictionary extension' is important, as is the ability to look at the words held in the main spelling checker. Some programs severely limit the number of words that may be added to a dictionary, others are virtually limitless. Writers are the most thorough users of words and buying a spelling checker program with maximum flexibility is the only way to ensure that it doesn't turn out to be more trouble than it's worth.

For some specialist applications it is useful to be able to create a separate user dictionary to the main spelling checker. This might apply when a writer is working on a highly technical topic with many specialised words. Adding all of them to the main dictionary might make it slow in operation and it is preferable to have them listed separately so that rapid dictionary passes can be made. Not all programs have this facility and if it is something you might want, you must ask when you are choosing the software.

There are many other difficulties that conspire to make some spelling checker programs less than satisfactory for writers. The way a program handles hyphens is one. As there are soft and hard hyphens (Chapter 3), the program has to differentiate between the two and read soft-hyphenated words as one. Apostrophes are another problem. If a program picks out 'doesn' as an incorrect word when in fact the string is part of 'doesn't', the writer will be slowed down by constantly having to tell the program that such apostrophisations are acceptable. The more intelligent the program, the more able it is to accept various types of word. Naturally the dictionary must ignore print codes when examining a document and if the program you choose wasn't designed to mate with your word processing program, you may find that the codes cause it to stumble. Another requirement for spelling checker programs is that single letter words such as 'a' are not highlighted.

A secondary use of such programs is word counts. This is a very useful facility and one that appeals enormously to journalists who get paid by the word. Some word processing programs provide a word count automatically, but all spelling checkers should include this feature. Typically the program should display: '9,347 words processed, 63 words not found'.

Dictionaries cannot guess your intention nor can they correct grammar. 'Their' for 'there' will always be passed as correct, 'a' for 'at' will be right and if you say 'he waved weekly' instead of 'weakly' you can't expect the program to tell you.

A feature I find useful in spelling checkers is trans-Atlantic translation. The dictionary I use was created in the USA and thus 'colour' is 'color', 'favour' 'favor' and so on. I have copied my original program disk and left it untouched. When I am preparing text for the American market I use this original version of the program to check my text and catch my English forms of these words. 'Lift' doesn't become 'elevator' of course and the two languages are significantly different (much more so than many people realise (realize)), but even when I'm making a conscientious effort to use American style, I will often accidentally add the 'u' in colour and I rely on my dictionary to pick it up. I have added the British spellings of these words to my usual dictionary so that I am not annoyed by their appearance every time I check a document intended for the British market.

Not all spelling checker programs originate in the USA, of course. Easyspeller II is a program specifically designed for the UK market and it carries UK spellings as standard. The dictionary's vocabulary is a massive 89,000 words and this may be expanded by the user. This program is designed for the IBM PC to be used in conjunction with the Easywriter II word processing program and special versions which include Webster's Legal and Medical spellers are also available.

Easyspeller II is available from:
TradeSoft,
FREEPOST,
London SW11 4BP.
Price on application.

One last comment about spelling checker programs: some are limited in the document size they can handle. If a program can only process fifteen pages of text at once the only way to use it for long documents is to go through the tedious process of dividing the document up into shorter files and then re-combining it after it has been checked for errors. Needless to say, the novelty of such an operation wears off quickly and programs of that type are of little use to writers. Good programs with larger dictionaries and an open-ended ability to handle long documents can be found to integrate with almost every professional word processing program and writers should investigate thoroughly any spelling checker program before purchase.

Here's a quick check list of features to look for:

* A minimum size of 40,000 words.
* A literal or *well-written* root dictionary.
* A program which will operate within your word processing program.
* A program which will allow you to add words to the dictionary automatically while using it.
* A program which gives you a word count.
* A program which operates quickly and which can handle any size of document.

Auto-hyphenation

When spelling checker programs are written, it is relatively simple to insert hyphenation codes in each word. If this is done, the spelling checker list of words can act as a master list of hyphenation points and when a dictionary program is processing a document it can, at the same time, automatically insert soft hyphens as necessary to save the user the trouble of manual hyphenation. I don't think this feature is of much interest to a writer as few I've met would be prepared to leave such decisions to the author of a computer program. Most of the programs are created in America and the best ones conform to the word breaks established by that ultimate American authority on words. Webster's Hyphenation is only necessary when text has to be justified for printing and writers rarely bother with this feature. Perhaps the only exceptions are journalists and writers of technical books who want to use the computer print out as camera-ready art work.

If auto-hyphenation is a feature that might be important to you, check that the program you are investigating makes its hyphen

breaks according to Webster's rules (or those of a similar authority) and make sure that not more than two lines at a time end with hyphens and that hyphens aren't inserted at the top or bottom lines of a page.

Dictionaries and thesauri

The principal reason why spelling checker programs don't include word definitions is storage space. It is difficult to squeeze a 100,000 word lexicon onto a floppy disk, let alone to include definitions. As on-line storage facilities in microcomputers increase and as techniques of program compression improve, so full-scale dictionaries are becoming available to writers alongside other useful programs such as thesauri.

These are really valuable tools for the working writer. A good dictionary is a tool that every writer uses and if one can be integrated into word processing, it represents a major advantage. Storage space is the big problem and full-scale dictionaries are usually only found in the type of integrated system described in Chapter 7.

Writers who prefer to consult the 'ultimate' dictionary – the twelve-volume Oxford English Dictionary – will have to wait a few years until they can use their computer to search it. The OED is now being converted into electronic information in a joint project by the Oxford University Press and IBM. The OED is said to be 'the repository of the English language' and the multi-million pound project to get the information into computer memory is likely to have a profound long-term effect on the world's use of English. Once stored electronically the OED could be revised and reprinted every two years to take into account the rapid changes that occur in the use of the English language.

From a writer's point of view the most exciting aspect of the computerization of the OED is that it will be 'on-line' to other computers. The final authority of the spelling and definition of 500,000 English words will be only a phone call away.

Two useful dictionary features (even available on 8-bit systems) are a 'look-up' feature and a 'guess spelling' facility.

The look-up feature allows a writer to access the dictionary from the word processing text. This means that if a writer is unsure how to spell accommodate, he or she can ask the program to show the list of words starting 'ac...' and the program will display a list of words starting with 'ac' on the screen. From that, the writer should be able to find the required word. Such programs don't usually allow the writer the luxury of moving the word from the list into the text; he or she usually has to remember how to spell it (or jot it down on a notepad) and then type it conventionally when the document is returned to the screen.

The 'guess spelling' feature is rather nice. When a word can't be found in a dictionary, the program automatically finds a few words which have the closest strings of text and displays them on the screen as 'guesses' at the correct spelling. This can save a lot of time and I have found that most programs which offer this feature guess correctly more often than not.

In Chapter 8, the next stage of word processing development is discussed. In 16- or 32-bit computer systems it is possible to integrate programs such as word processing and dictionaries, and words can be moved from one program to another, but most systems currently operate in the manner described above.

Even limited 8-bit systems can offer a thesaurus, however. Random House offer a disk-based thesaurus and this is used similarly to a dictionary. The writer leaves the word processing page and enters the thesaurus disk, asking the program to supply antonyms or synonyms for a particular word. The program supplies a list of such words on the screen and after examination the user has to re-load the word processing program and re-locate the place of work. All this takes time and many writers prefer to keep a thesaurus (or a dictionary) on a shelf beside the machine. With an 8-bit system it is quicker to look it up in a book than to look it up on the screen. This is not the case with more powerful systems, as discussed in Chapter 8.

Grammar checkers

It might be surprising, but several programs have appeared on the market for 8-bit machines which purport to offer some degree of grammar correction. The best known is Grammatik and if this horrendous title makes you wonder about the program itself, you are right to do so. It – and its competitors – are unable to check grammar in any 'intelligent' way – that would require a program

which would demand more memory than any of the 16- or 32-bit machines can currently offer (although I wouldn't think a good program of this type is more than five years away).

Grammatik is a protocol-checking program. To a limited extent, the way it works can be established by the user. A London journalist uses the program (in conjunction with WordStar) to check for sexist syntax. The program looks at the text strings in a document and compares them to a list held on disk, rather in the way a spelling checker operates. In this instance the program might discover the word 'statesman' in the text and it would provide a warning – 'Gender specific term, use diplomat!'

Grammatik and its clones is unable to find anything wrong, even on powerful systems, with a sentence such as this. They are useful however in spotting such things as unclosed brackets or uneven quotation marks and accidentally repeated words in text such as 'the the'.

Perhaps the cleverest thing the program does is spot some clichés. There are times when even the best writer lets a cliché fall from the pen in a moment of elation or tiredness. This is usually caught on a re-reading, but Grammatik has a limited number of the worst clichés in store and if such a text string is found in a document, a suitably admonitory warning is provided.

One of the best 'writing improvement packages' comes from a company called Oasis Systems in San Diego. Called 'Punctuation and Style', it is designed to operate with most CP/M-based word processing programs (including WordStar) and it catches punctuation errors and unpaired format commands such as uncompleted underlines and doubled words. This program is also impertinent enough to offer you a 'critique' of your writing, suggesting alternatives for misused or over-worked phrases.

'Punctuation and Style' and the company's excellent dictionary, 'The Word', are available from:

Oasis Systems,
2765, Reynard Way,
San Diego,
California CA 92103,
USA.
Price on application.

Foreign language dictionaries

Writers who translate, or who have to write in foreign languages, will be pleased to learn that several software houses are developing foreign language dictionaries. These will be available on both 8-bit and 16-bit systems and because they are relatively easy to create (once a master dictionary program has been written) the number of languages available will increase rapidly.

Some dedicated word processors offer an enormous foreign language translation program. These expensive systems can run several spelling checker programs in a wide variety of languages – often with dictionary sizes topping 150,000 words. Such systems are built for professional use by translators, but writers working with foreign text would find them incredibly useful. Thankfully this sort of power is now becoming available on less expensive microcomputers.

It is estimated that by the early 1990s all major languages will be capable of translation by programs running on personal computers. Meanwhile, dedicated language-processing systems such as the 'ALPS' system, built in Provo, Utah, can be interfaced with almost any word processor. This system is expensive, but it is able to translate many elements of foreign text automatically. Human checking and re-arrangement of such text must still be done by humans and in the major translation centres – the UN and the EEC headquarters – such editing is carried out on word processors.

Information on ALPS is available from:
Automated Language Processing Systems,
ALPS,
190, West 800 North,
Provo,
Utah 84601,
USA.

Index programs

Preparing an index is a chore that many non-fiction writers come to hate. Most publishers' contracts demand that the writer prepares an index (or pays for an index to be created) and there are several ways a computer system can help with this task.

An increasing number of books are being produced directly from

computer print out which is stuck down and used as camera-ready art work. This is a trend I dislike as I don't like to see a book cheapened by poor print quality. Many books on the subject of computing are produced in this way and although this process produces an unprofessional appearance in a book, it has one advantage. It is easy for the writer to use a computer program to prepare an index.

The Global Search function of a word processing program can be used to locate words in text. When the author's computer-generated text is going to be used as art work, the page locations of words will remain the same when the book appears. This allows the writer to draw up a list of names to be 'searched' and then use the Global feature to discover all locations of the words. A second and more efficient method is for the writer to add a special mark against words which will appear in the index when writing or editing text. This mark must be one which does not appear for any other purpose in the document and the Global Search program can then be asked to find every occurrence of this character.

Even when a book is to be professionally set, the computer system can offer considerable help in preparing an index. Most writers set about the task by reading the page proofs of a book, marking each word that should appear in the index as they go, and then going back through the text entering the word and page number onto index cards stored alphabetically. After all the words have been entered, the index has to be typed up from the card index file. The power of a word processing program to insert and delete text eliminates any re-typing. Creating alphabetic headings in the program allows the user to run up and down the list, inserting entries. The program takes care of the re-shuffle of space necessary. When the index has to be printed, the writer is faced only with a 'clean-up' job.

More advanced forms of special index program are now available for microcomputers. Several software houses market indexing programs but these do little more than a writer can do with the Global function of a good word processing program. It is possible to write a program which will create a database type of program for indexing and an example of such a program for creating a book index appeared in the June 1983 edition of the British magazine *Computing Today*.

Users of the ubiquitous WordStar program may be interested to learn of a program called 'StarIndex'. This program integrates with WordStar to provide the writer with a program which creates alphabetical headings, with sub-categories, a table of contents (with four levels of emphasis) and other lists of items such as tables and figures. StarIndex can number paragraphs, keep track of page numbers and shift index numbers as a document is revised. The program is available from all dealers who stock WordStar. Price varies according to local conditions.

7

On-line Researching and Database Storage

Not every writer researches before writing a book or an article, but most carry out some form of research before starting work, whether the project is fiction or non-fiction. The computer has the most extraordinary ability to assist in this research but it is a facility which is, as yet, used by very few writers.

Computers can't help a writer to get the flavour of Rome. The only way to do that would be to go there. Computers can't interview the last surviving witnesses to a World War I incident. The only way is to visit them and coax them to tell their stories. But a computer can gather factual information at a speed and with a thoroughness which is *impossible by other means*.

Going on-line

For the last fifteen years or so, many of the world's large companies, governments and universities have foreseen the value of electronically-stored information. Years before the computer revolution really got under way many of these organisations were quietly building up databases (computerized filing systems) of information which they are now making available to the public – at a price.

The British Library offers an on-line computerized information service about all books and publications back to 1959. 'DIALOG', perhaps the world's biggest commercial database, was set up in 1972. This service, operated from California, is owned by the

mighty Lockheed Corporation. There are dozens of these databases and the scale and scope of the information available is guaranteed to make even the most jaded author's mouth water. DIALOG currently offers 200 different databases which includes access to *Books In Print*, a bibliographic listing of all American books currently available, the *Magazine Index*, an index to the contents of popular magazines which stretches back to 1976, and dozens of specialist databases on such topics as crime, health, pollution, sport, history, finance, etc. In addition there are several databases offering an index of all stories which have appeared in the major newspapers of America (and Britain) since 1979. Thus a researcher has only to input the search words 'Exocet and Falklands' to gather a listing of all major newspaper stories which have appeared on this subject.

A printed database called *Who's Where Among Writers* has been set up in New York. This publication lists freelance writers in North America *and* Europe and is available to editors, reviewers and contributors to magazines, newspapers, and periodicals. Listing is free. Contact:

James Cook,
Editor,
Who's Where Among Writers,
150, E. 50th Street,
New York,
NY 10022,
USA.

An *on-line* database of writers is also running. Called *Freelance Writers Database* writers or editors wanting to access information or to add a listing should contact:

Jo Ann Bardin,
Editor/Publisher,
Circle Productions Inc.,
307, Westlake Drive,
Austin,
Texas,
TX 78746,
USA.
Phone: 512-327 1208

Any home computer can be attached to the telephone lines and can 'access' these vast stores of information. Those writers and researchers who have not yet been fortunate enough to tap the world's electronic information store have no idea of the benefit they are missing.

To search these databases from the convenience of your office, study or front room requires five things:

1. A computer.
2. A modem (see below).
3. Communications software.
4. A subscription to a database.
5. An ordinary telephone (preferably plugged into the system via a telephone point. The telephone company or local telephone authorities can supply one of these if required).

The hardware

Before a computer can communicate via the telephone lines, its signals have to be converted into 'tones' which can travel in analogue form through the wires of the telephone network. This translation is carried out by a simple electronic circuit attached to the user's computer called a 'modem'. A modem (a 'modulator/demodulator') is a relatively inexpensive piece of equipment (£150/$200) which attaches to a microcomputer and some types of dedicated word processor via a 25-pin socket (usually called a 'port') known as an RS-232 socket.

Almost all computers capable of carrying out word processing will already be fitted with a RS-232 port, but it is possible to fit any computer with such a port and there are a host of companies making such 'add on' peripherals. Owners of dedicated word processors which do not have RS-232 ports should establish whether there is communications software available for their machine (see below) and then contact one of these peripheral suppliers to see if a port can be fitted to their machine. Your computer dealer or the pages of the computing magazines are the best sources of addresses.

The modem is installed by attaching it to the computer via the RS-232 port and to the telephone system via a standard telephone point. It is possible to use a modem into which a telephone handset can be placed, but these 'acoustic couplers' are not really to be recommended as the connection is less reliable than a 'hard-wired' model (i.e. a modem wired directly into the telephone line). In

practice the modem is either plugged into an additional telephone point in parallel with the ordinary phone or it is plugged in to replace the telephone when required. In use the researcher dials a telephone number, hears the high-pitched tone which is sent by the database computer and then presses a button on the modem which then takes over control of the line. In a system where the modem is plugged into an additional telephone point, the user presses a button on the modem to activate a tone which is sent to the host computer and then hangs up, allowing the modem to continue the call and keep the line open. In a situation in which the user has only one telephone point, the telephone is unplugged after the host tone is heard, the modem is plugged in and the answering tone is sent. In both methods the user is able to see what is happening on the telephone line from information provided on the computer screen.

The software

Before your computer can communicate it has to be supplied with a communications program. This program organises the computer to become a 'semi-dumb terminal', i.e. a terminal which can attach itself to a large computer. The fact that the connection will be made via telephone lines is unimportant, communications software is required if two computers occupy the same room and wish to swap information.

There are communications programs available for almost every brand of microcomputer and there are many alternatives available for the better-known models. Writers will need a fairly good communications package as they are likely to be capturing large amounts of information, but communications programs are not expensive to buy (nowhere near as expensive as word processing programs, for example) and can be found for about £100/$150.

Communications programs do several things, but the most important features are the control of communications 'protocol', the control of on-line transmission, the storage of captured data and the ability to echo the instructions sent by the researcher.

It will be seen from the above paragraph that computer communications is an area strewn with jargon and in order to gain the benefit from this important computer facility a little jargon has to be understood, along with some basic concepts of computing.

Communications 'protocol' is the collection of agreed parameters under which information is sent and received. If two computers

communicate inside agreed technical specifications this is said to be the 'protocol' of the communication. *All* computer databases available to the public exchange information which is coded according to the American Standard Code for Information Interchange. This code is usually abbreviated as ASCII and, thankfully, it has become a world-wide standard.

The ASCII code has worked out a table of codes to represent every character of the alphabet (both upper case and lower case), numbers 0 to 9 and all necessary special and punctuation characters such as : and ›. Every computer which sends information via the telephone lines sends it in the ASCII code. Thus the first job of a communications program is to send and receive ASCII codes. Whether the program actually carries out the translation of digital information into the ASCII code depends on the type of program purchased. Most word processing programs have the facility of converting text files into ASCII files and with this facility the writer would require a less sophisticated communications program.

Because the communications program converts all output into ASCII, it does not matter what type of computers are connected. A small home computer can connect up to and 'speak' with the largest IBM mainframe computer. Internally the two computers are completely foreign, but as all communications are in the mutually understood ASCII code, full communication is possible. Translator programs inside each computer ensure that the communicating partners understand what is going on. ASCII is like a successful Esperanto for machines.

The protocol concerns the way the ASCII code is sent and there are only a few options to worry about. The technicalities of the protocol need not concern the writer, but it is important to say that it must be easy to change communications as the requirements of databases differ.

The first element of protocol which has to be decided is the speed at which information is sent. This is called the 'baud rate' (after Baudot, the French inventor who invented the technique of sending information in blips along a wire). Pronounced 'bowd', there are two main rates – 300 baud and 1,200 baud. 300 baud sends 30 characters along the wire every second and 1,200 sends 120 characters.

After the speed of communication, the next protocol setting which has to be made is the 'word length' (i.e. the groupings of characters during transmission). The most common word lengths

are '7-bit' or '8-bit'. Other parameters which have to be set are 'parity' (to be set to either 'odd' or 'even'), the number of 'stop bits' (the spaces between the characters, usually 0 or 1) and, finally, full or half-duplex transmission.

With the exception of the last parameter the non-technical writer can simply follow instructions for entering the required parameters into a communications program and never have to worry about what the settings mean or what they do. The best communications programs are all menu-driven and this allows the writer to answer on-screen questions to make the settings.

Understanding 'full and half-duplex' settings is important as this governs what you see on your computer screen. Which method of communication you choose will be decided by the protocol of the host computer. When you join the British Library's BLAISE line database (or any other service) you are told which settings will be required for communication. In full-duplex the two computers can talk to each other at the same time. This allows the host computer to 'echo' back to you what you are typing. Thus when you type 'Select Exocet and Falklands' on your computer, the words appear on your screen not from your computer, but from the host computer echoing your input back to you. In half-duplex transmission only one computer can 'speak' at one time – as in a two-way walkie-talkie radio conversation. This means that you have to select a feature usually called 'Self Echo' in your communications program menu and this displays what you type on your computer screen. Although it may seem absurd that you should not see what you are typing on your own screen, it is important to realise that once your computer is connected up to the database computer, your computer has lost its autonomy and *has become a terminal attached to the host computer*. What you type goes to the host computer – perhaps 9,000 miles away – and it will only be shown on your screen if the host chooses to provide you with a 'copy' or if you command your own computer to show you an echo on your screen.

The information available

If the foregoing section has seemed like hard work, the motivation to get to grips with duplexes and parities should be found in what follows.

The majority of electronic information available is based in the USA. This should not dispirit readers in other parts of the world

as international telephone access to databases is *much cheaper* than ordinary voice transmission. DIALOG has arranged for British subscribers to call the database in Palo Alto, California at a telephone cost of only *$10 per hour*. This type of saving makes the communication charges negligible. The information that is accessed has to be paid for, of course, but such a saving makes DIALOG as available to writers living in Edinburgh as it is to those in San Francisco.

The reason why international data communication is so cheap is that many users can share the same telephone line. The telephone authorities use computers to control the flow of data as it is sent at high speed along lines in 'packets' which are individually identified. Thus many users can be sharing a line across the Atlantic or Pacific and not know that their parcels of information are being sent in between parcels 'addressed' to other users.

Inside the USA this system is used by the Dialnet and Tymnet telephone systems and offers a very low-cost means of accessing databases at long distance. A computer user in Atlanta can call a computer in Chicago using one of these networks and the price will be a fraction of what it would be if it were a voice call. Voices require a dedicated line, of course, and the words sent and received by humans can't (at the moment) be coded and bundled in any different way. In the future human speech may be sent in a similar way, but that is a different topic.

So what information is available? There are seven major electronic information services in the USA and countless smaller operations. It is only possible to provide a brief glimpse of what is available in this chapter, but I think it should be sufficient to motivate those writers who use research to find out more about the information available.

As mentioned earlier, DIALOG is probably the biggest database and it costs nothing to become a subscriber. After joining the DIALOG service you will be provided with a password and given information about the various numbers to dial to gain access (from a wide variety of countries) and you will be told the protocol used by the DIALOG computers.

The procedure for 'logging on' (more jargon) to DIALOG is to dial the number supplied, establish contact between your computer/modem and DIALOG and then enter your password. Once this is accepted you have access to the large numbers of databases, or 'files' as DIALOG calls them, available on this service.

If your interest is agriculture and nutrition there are six separate databases which have information available. *Agricola*, for example, has 1,834,000 records (at the time of writing) and is the indexing and cataloguing database of the American National Agricultural Library. This large file provides comprehensive coverage of *world-wide* literature on agriculture dating from 1970. If you wanted to find out about how the size of farms has altered, you would enter search terms such as 'Farms and acreage'. The 'and' in that 'search string' (more jargon) is a Boolean operator which tells the database only to retrieve records in which both the terms 'Farm' and 'acreage' appear. Such a search is likely to produce many more listings than those concerned with the varying sizes of farms and the researcher would further refine the search, perhaps entering 'Farms and average acreage', to whittle down the number of 'hits' found. When the number of responses is manageable, the researcher can ask for the details of any or all of the records to be shown on the screen. This information can be stored in the researcher's own computer for later print out and analysis The record usually takes the form of providing the title of the book, article, paper, etc. on the subject, provides the author's name, the date and place of publication and, most importantly, *provides an abstract of the document concerned*. This abstract describes the main elements covered in the document and from this the researcher can decide whether the document is required for research purposes or not. If it is, it can be found through normal research channels such as libraries and in many cases copies can be ordered through DIALOG itself, which passes the researcher's order on to third party information services who find and copy the article required and mail it to the researcher.

It may have become obvious from the above description that the researcher needs to know a little about research techniques and although many writers will have some knowledge of how librarians conduct searches, a little homework may be required before a database can be searched efficiently. Most of the major databases offer training seminars – DIALOG holds them in many countries around the world.

The writer wanting to know about the acreage of farms may have chosen to further refine the search by selecting 'American farms and average acreage' or 'EEC farms'. But as there are another five databases available on this subject it will be seen that writers concerned with food and food production can search the

major part of the world's literature on the subject from the comfort and economy of their living room. It costs $35 per hour (pro rata for part of an hour) to be on-line to *Agricola* and general database prices range from $10 an hour to $100 an hour – and much more for some highly specialised databases such as those containing medical or legal information.

It would be impossible to do justice to DIALOG, or to any of the other information services, in the scope of this chapter, but I have selected just a few of the databases that might be of particular interest to writers.

Adtrak is a database which indexes every advertisement above a quarter-page size which has appeared in 148 major American consumer magazines. Thus it is possible to discover precisely where Honda (for example) are advertising and when.

America: History and Life is a file index of articles, books and papers on American history.

The *Biography Master Index* is a master index to biographical information found in over 600 publications. Entering 'John Lennon' produces a list of all the biographies of John Lennon that appear in the various *Who's Who* books, music directories, etc.

Book Review Index is a file that writers are likely to want to use for personal reasons. This database contains information from 1969 onwards and provides an index to book reviews published in over 380 journals. When your publisher's publicity officer tells you she's sent you all your reviews *you can check*!

LC Marc is the index maintained by the American Library of Congress. Every book and publication listed since 1968 is available here. (Books before 1968 – dating back to 1897 – are available on a database called *Remarc*.)

The *Microcomputer Index* is an index to the major American microcomputing magazines.

The *UPI News* file has an index to all UPI news stories carried since April 1983.

etc., etc., etc.

DIALOG's store of electronic information is growing monthly and new databases are constantly being offered. When on-line to DIALOG subscribers can switch between databases and this allows a comprehensive search of a topic to be made in related fields.

Information about DIALOG is available from:
Britain:
DIALOG Information Retrieval Service,
PO Box 8,
Abingdon,
Oxford OX13 6EG,
UK.

USA:
DIALOG Information Services Inc.,
Marketing Department,
3460, Hillview Avenue,
Palo Alto,
California 94304,
USA.

Canada:
Micromedia Ltd.,
144, Front Street,
West Toronto,
Ontario M5J 2L7,
Canada.

Australia:
Insearch Ltd./DIALOG,
PO Box K16,
Haymarket,
New South Wales 2000,
Australia.

Despite its vast size, DIALOG offers only a tiny fraction of the information that is becoming available on-line. The other major American databases all offer important alternative sources.

BRS (Bibliographic Retrieval Services) offers many databases not available on DIALOG and of particular interest to writers will be the *Academic American Encyclopedia*. This large database stores the *full text* of this ten million word encyclopedia and entries may be searched and all relevant information, including tables, bibliographies and fact boxes may be down-loaded.

Information about BRS is available from:
BRS,
1200, Route 7,
Latham,
New York,
NY 12110,
USA.

Of the other US databases writers will be interested in Orbit and the Dow Jones News/Retrieval Service. Orbit is a subsidiary of the Burroughs Corporation and it started offering on-line information in 1965. It offers a wide range of specialist information databases with files on such subjects as economics, chemistry, sport and Christianity. The Dow Jones service is, as might be expected, very strong on financial information and for more successful writers the investment information on its own is sufficient justification for becoming a subscriber. There is also a wide range of general material available from DJ and this covers such information as encyclopedias, movie reviews, UPI news and sports results and background material.

The best-known databases to microcomputer users in the USA are *CompuServe* and *The Source*, but both are geared to the hobby and leisure market and provide such information as travel schedules, restaurant reviews, etc. and are likely to be of less 'hard' use to the professional writer.

More information on Orbit is available from:
ORBIT Information Retrieval System,
SDC Search Service,
2500 Colorado Avenue,
Santa Monica,
California,
CA 90406,
USA.

More information on the Dow Jones service is available from:
Dow Jones News/Retrieval Service,
PO Box 300,
Princeton,
New Jersey 08540,
USA.

In Britain the major information utility is undoubtedly the British Library's BLAISE Line. This computer, operated from Harlow in Essex, has information about a collection of books, papers, pamphlets and periodicals that is unequalled anywhere in the world.

Of course, not all of the books held by the British Library are yet indexed on BLAISE; that is a task which will take many years. Yet all publications held by the Library which were published from 1959 onwards are available as is a marvellous database called *The Eighteenth-Century Short Title Catalogue*. Other files available on BLAISE Line include *LC Marc*, the index of the American Library of Congress from 1968, *British Education Index* which offers information on articles and papers about education from 1976 onwards, *Conference Proceedings Index* which is an index to papers and proceedings of conferences, symposia, seminars and workshops since 1964 and *AVMARC*, an index of audio-visual materials published since 1960.

BLAISE is a very significant source of research information for writers and the service is available in countries where telephone access to the UK is possible. The main wealth is, of course, the *UKMarc* file the main catalogue of British Library books and if, for example, a writer is thinking about starting a new book on the Rocky Mountains, it is possible to search BLAISE files to establish what other books have been published on that topic. Using BLAISE is much more efficient than consulting a printed reference work such as *British National Bibliography* or *The American Subject Index of Books in Print* as subjects can be combined and cross-referenced in a way that is quite impossible with print. The fact that all this can be accessed from your home on the Isle of Skye or in Sausalito is an added bonus. For registered British Library users it is also possible to order loan copies of books while on line to BLAISE and have them sent to your home address.

More information about BLAISE Line is available from:
BLAISE Line,
Marketing Office,
The British Library Bibliographic Services Division,
2, Sheraton Street,
London W1V 4BH,
UK.

Where to store the information

Gaining access to the world's databases only partly harnesses the computer's ability to manipulate information. Once gathered, electronic research material can be printed out onto paper and used conventionally, or it can be transferred into the writer's own electronic database. If it is stored in this way, it can be searched by methods not available when research is paper-based.

In practice the research for a non-fiction book is still likely to involve a vast amount of paper – books, newspapers, photocopies, cuttings, etc. – and building a database index of this material can make it much easier to sort information into its various categories.

All microcomputers capable of word processing can run database programs, but on 8-bit micros these have to be run separately from word processing and other programs. With 16-bit systems it is possible to use the programs concurrently and to switch from the word processing program, search the database, and return to the chapter in progress with just a few keystrokes.

Perhaps the best-known database program for micro-computers is dBase II, a program developed by the Ashton Tate company. A version of this program is available for almost every personal computer and it would certainly be sensible for writers of non-fiction to start building up their own special interest databases from the moment they start to use a computer.

In dBase II, as with most database programs, the user decides how the file will be constructed and then types the records according to these 'rules'. Each entry in a database program is called a 'record' and each heading inside that record is called a 'field'. An entry which indexes the appear-

ance of an article about Swiss trains in *Cosmopolitan* might read:

Journal: Cosmopolitan
Page no. 216
Date: June 1984
Heading: Why Are Swiss Trains Better?
Author: Holland, Robert
Abstract: The article discusses the Swiss rail network and compares it with other European and American systems. It concludes that the network is better than others because of heavy investment in the network from central government. Detailed statistics of the network are included.
Descriptors: trains, Swiss, rail, government investment.

In addition to this literal information a database entry will also include a file and record number. When searching a file which holds information, the user may search any of the seven fields contained in the above record. The author's name, Holland, may be searched and to do this most effectively the researcher will enter HOLLAND followed by a limiter such as (AU) for author. All articles by Holland are thus produced. Searching another field such as the descriptors produces articles on certain desired subjects and the contents of fields may be combined in searches. Combination searches can include the title of the journal and the author, any or all of the descriptor words and data (i.e. only articles about Swiss trains published in 1983), or any other combination of the fields.

From this it will be obvious that the small amount of time spent 'keying in' the information is more than repaid by the ability to search a database selectively. Such a facility will be of far more use to writers of non-fiction and, in particular, technical literature, but some fiction writers also have a clear need for electronic filing.

Dorothy Dunnett had a reading list of 700 books when she started researching one of her historical novels. A method of indexing and cross-referencing that amount of information would be of enormous value.

Len Deighton already uses his word processor as a crude database, developing 'files' (i.e. records) on each of his main characters. As the story progresses and more information about the character emerges, so he adds the salient information to the file. When he comes back to the character 300 pages later, he is

able to call up the file on the character and refresh his memory about the character's physical appearance, background and actions so that continuity is assured. This facility is of enormous value in any long-distance work where continuity is always threatened, or at least achieved expensively in terms of a writer's time.

Hard disks and things to come

Once the writer starts researching the world's electronic sources and keeping his or her own databases, the problem is finding disk space to store all the information. One 5.25 inch floppy disk could certainly store all character and scene information for a novel, but it would only contain a relatively small number of index records to periodicals. The options are to keep separate subjects on separate disks – e.g. British athletes on one disk and American athletes on another – and swap disks as necessary, or to switch to a hard disk storage system.

Hard disks are tumbling in price and at the time of writing a 15 megabyte disk is available for under £2,000/$3,000. Within the next few years the price will drop still further.

This type of storage capacity would allow a writer to keep a dozen files available for instant searching and the nuisance of having to stop work to swap disks before continuing a search is banished.

Looking into the not-too-distant future it is easy to imagine the writer with a personal database and magnetically-stored encyclopedias to rival those of regional libraries. Hard disk technology offers considerable power, but it will be optical and laser disks that provide the storage medium for information on this scale. These systems already exist and they are now set to move out of the big-business arena and into the micro market.

Optical disk storage is massive. Capacity is no longer measured in megabytes but in gigabytes – billions of bytes. (Note that this is the US billion, i.e. one thousand million, not one million million.) A 12 inch optical disk can store two gigabytes of data - sufficient to store the entire text of the *Encyclopedia Britannica* on one side.

Laser video disks (similar to the system already in use for commercial video disks) will offer between 10 and 20 gigabytes of information and it is when these are ranged alongside the writer's computer that true 'home libraries' will become practical (and relatively economic).

In the meantime, the task of learning how to manipulate electronic information and actually getting that information out of its static printed form and into the more powerful magnetic medium has been started.

Readers who would like to know more about on-line researching are referred to the author's book 'The On-Line Handbook' published by Fontana at £3.95.

8

Beyond Word Processing

Apart from word processing, information retrieval and database storage, what more can a computer do for a writer? The power of word processing seems more than enough and when aids such as typing tutors, spelling checkers, grammar checkers, translation programs and on-line researching have been added, it would seem that there is an almost indecent amount of help available to the writer who is prepared to harness new technology. The reality, as unpalatable as it is for those writers who feel that the blood, sweat and toil of manual writing is an essential spur to their inspiration, is that there is much, much more help available for those following 'the great pursuit'. This help includes techniques with such exotic-sounding names as 'Boolean word processing' and 'thought processors'.

When the first draft of this book was started, this chapter was provisionally entitled 'The Future'. It should be clear from earlier chapters that the real power of computers is measured in the 'bit-size' of their central processing unit and, when I planned the book, the majority of computers in use by writers were '8-bit' and only the more adventurous practitioners had moved up to 16-bit machines.

The IBM PC 16-bit computer and the many look-alike clones that followed it represented the state-of-the-art in computing and I had intended originally to explore the possibilities of 16-bit computing for the writer in this chapter. Now the 32-bit machine is here with a vengeance and its vast potential must also be assessed.

Sinclair's 32-bit QL (complete with integrated word processing, spread-sheet, database and graphics programs) provides a machine

with a potential so great that it is understandable if writers are dismayed at the new computing concepts which have to be digested if the potential of the new machines is to be fully used.

The limitation of 8-bit computers – the Commodore Pets, the early Tandys, the Apple IIs, the Superbrains, etc. - is that they can only use 64K of Random Access Memory at one time. It would be perfectly possible for manufacturers to add more RAM chips inside such machines, but the CPU is strictly limited in the information it can handle simultaneously.

The 16-bit machines – the IBM PC, the Victor/Sirius, the Apricot, the Apple Lisa and Macintosh and so on – are much, much more powerful. These machines can address up to 500K of RAM and often up to one megabyte. This is an important ability.

A word processing program typically occupies about 48K of RAM space. In 8-bit machines this leaves only 10K or so available for text storage (allowing some memory space for the computer's house-keeping functions), and, as a result, the word processing software written for such machines has to make heavy use of disk storage for text.

The result of such software design was that the writer was waiting constantly; waiting for a page to be saved, waiting for a document to load, waiting while floppy disks were changed over. Each wait might only be a few seconds, but in the course of a morning's work they could add up to considerable frustration.

A well-designed 8-bit system is capable of really excellent and professional word processing and many writers would be more than content with such a system. Compared with a typewriter, such machines are the epitome of speed, elegance and utility.

As writers grow to understand more about computing, however, they are likely to demand a greater level of sophistication from this cheap, intelligent aid. The spread of 16-bit computers was a significant step forward.

A 16-bit machine equipped with 500K of RAM can run several programs at once and this allows the writer to work almost effortlessly. After loading the word processing program (48K), the writer might choose to load a spelling checker program (50K), a grammar checker (50K), a database controller (12K for the actual program, not the file records – these can be of almost any size and can be kept on disk), a large mailing list and control program (40K), a telephone communications program (5K) and a financial spreadsheet (30K). Using all these programs together would take

up about 235K of RAM. This leaves *over 250K of RAM free*! The potential this offers the writer is considered below under the section 'Integrated software'.

The Sinclair QL (when fitted with proper disk drives) and the other 32-bit machines which are following, offer power and flexibility far beyond the needs of most writers. The QL can address up to 1 megabyte of RAM in its current form and with later chips which will be offered as options the machine will be able to use as much as 10 megabytes of RAM! The fact that such power is available in basic form for *less* than a writer would have paid for an IBM Golfball typewriter ten years ago indicates the startling power/cost ratio of the microcomputer.

The 32-bit machines will allow the writer to carry out all the functions possible with 16-bit machines but in time they will also allow such operations as resident definition dictionaries, thesauri, bulk transmission of text over closed networks at startling speeds and capacity for the writer's own databases. The world's major encyclopedias are becoming available in electronic form and within the life of this book writers will certainly be choosing to have such reference works on-line at home, probably resident in machine RAM. It is arguable whether many writers will want computing power of this type, but as it is going to be available at very low cost, it will certainly form the basis of every writer's tool kit in the 21st century.

Integrated software

To take full advantage of the large RAM sizes made possible by 16- and 32-bit machines, the software has to be written in such a way that the various programs will work together interactively. This concept is called 'integrated software'.

The majority of writers using word processors still switch the machine on and load just a word processing program. The program is used for the creation of text and any other computer use – spelling checks, etc. – can only be achieved by the user 're-booting' (i.e. starting the system up again) and loading new programs or switching programs over. Radical changes in computer function, such as going on-line for research purposes, require that the word processing program is removed completely and a special-purpose program loaded. If you own, or are thinking of buying, an 8-bit computer system you will not be able to alter this method of working.

It is only with the new generation of 16- and 32-bit machines that integration between programs becomes possible. The best known versions of integrated software are Lotus 1-2-3, Symphony, Apple's Lisa and VisiON.

Multi-tasking

The principle behind integrated software can be summed up as 'multi-tasking'. It's rather like imagining having several computers in a room. A writer could be writing on one and swing round in the swivel chair to look up a fact from a database on a second machine. If a third machine were running a dictionary program it would stand ready for inquiry. This is multi-tasking and the principle behind integrated software is not only that one machine should be able to carry out all these functions simultaneously, *but that the results of each program should be transferable to other programs.*

In our imaginary room with several computers running different programs the writer would have to print or copy the research information offered by the database computer before re-typing it and combining it with the text being written on the word processing computer. Likewise with the spelling or definition culled from the computer running the dictionary program. With integrated programs running on a single machine, the writer is able to switch from a screen full of text, scan the database, find the paragraph of information and then *transfer that back to the word processing program.*

Once this interplay between programs is achieved a writer can speed up the processes of writing and research even beyond the rapid rate made possible by standard word processing. It is not necessary to buy special hardware to achieve this end and one of the reasons for the less than spectacular success of Apple's Lisa is that when launched the Lisa system required the purchase of a $10,000/£7,500 computer system to achieve the goal of complete integration. The Lisa is now available at lower prices, but although a wonderfully advanced machine, it may have missed out to the software houses that have managed to achieve the concept of integrated software without adding special hardware.

The astonishig thing about the Lisa system is that it is so complete. Lisa stands for 'Locally Integrated Software Architecture' and the machine and software were developed in a $50 million project when Apple sensed that they might lose their early lead in the microcomputer market to IBM. When first launched the Lisa was so advanced that many did not understand its capabilities.

Today it still stands out ahead of the competition, although its price is a barrier to true popularity. Many of the Lisa's features have been incorporated in the Macintosh, the low-cost 16-bit business computer that Apple introduced in 1984.

Windows

The Lisa, and the other 'new generation' computers such as the QL, are capable of running several programs at once. The user can split the screen and see two 'windows' which show information from two separate programs. Information from one of the screens can be 'lifted' and transferred to the other. This facility is now becoming available on machines such as the IBM PC with the use of software that has been especially written to mimic window operation and the advent of the 'concurrent CP/M' operating system from Digital Research now allows integrated software to run on many 16-bit micros.

In practice, the suite of programs available for the Lisa aren't exactly suited to a writer's needs. The programs supplied with the system are LisaWrite (word processing), LisaGraph, LisaDraw (a graphics program), LisaList (a database), Lisa Project (a project management program) and LisaCalc (a financial spreadsheet).

It will be obvious from this list that Apple was aiming at the office executive and many of those programs would be irrelevant for the professional writer, although possibly of use in personal life.

The Lisa system in its full form is supplied with a megabyte of RAM, two floppy disks and a five-megabyte hard disk. The screen supplied with the Lisa is unlike most other computer screens and the addition of a 'mouse' (see below) to control programs is another feature aimed more at the office user than the writer.

High resolution screens

Once a computer system is capable of running several programs at once the problem of finding a suitable method of display becomes urgent. Apple's answer for the Lisa was to design a fine definition screen which allows the user to see two programs working at once.

This window technique works well on the Lisa as the definition is good enough to keep text and graphics clear as they reduce in size. Some packages which are designed to make other 16-bit machines offer the user Lisa-style windows fail because the computer screen lacks the definition to show that much information in sharp detail. In practice text can be read on a 'windowed' IBM,

but it isn't as easy to read as it should be. This is of little use to the writer.

I believe the idea of windows is an unnecessary gimmick for writers. The ability to use more than one program at once is important, but there is rarely a need to see both at once. Integrated software works perfectly well when the user presses a button that clears the screen of one program display and replaces it with another. The first program doesn't cease to operate and the transfer of text can be achieved with the screens used in their 'whole' state. But windows have become the gimmick of integrated software and every supplier thinks that the package must use windows in order to compete. The same is true of 'mice'.

Mice

'Mice' are hand-held pointers which allow the users of integrated software to order program functions. It is possible to point the mouse at a section of text on the screen, press a button on the mouse to order the section highlighted and then move the text across the screen and through the window 'frame' into another program.

The use of mice was pioneered by Apple with the Lisa, but whether mice are going to become popular is open to debate. The concept behind mice is that computing power is offered to those with only limited typing skills. In traditional word processing programs the user must delineate the block of text to be moved by issuing commands on a keyboard and must then tell the program where to re-insert the block of text by issuing further keyboard commands. As computers become more powerful they become easier to use and mice are designed to open up computer power to those with limited keyboard skills. Such facilities are of little interest to the typist-writer.

Most writers who have used word processing will agree that good on-screen cursor 'navigation' (i.e. the ability to move the cursor about the screen and within a document) is important in using the program easily and it is in this area that mice may be of help. Using a combination of keyboard and the mouse, the writer flipping through a thesaurus on screen will probably be able to pinpoint a word to be lifted out with a mouse a lot quicker than by positioning the cursor with the keyboard controls. This is merely a means of shaving a micro-second off response time, but we writers are as lazy as any other human beings and we'll save the time if we can.

'Keyboard bypass technology' (the computer industry loves such phrases!) comes into its own when used with menus. A mouse allows a user to select quickly an option from a menu of choices, but although this sounds attractive, writers will only benefit if the application of such a system does away with the necessity of learning special syntax commands to execute a program function. Many conventional word processing programs which don't use mice already offer this ease-of-use.

Icons

Once a computer system has been fitted with a high resolution screen and a hand-held cursor and command control (a mouse), it is possible to place many commands formerly keyboarded onto the screen. On-screen graphics used for commands are called 'icons', and the Lisa was the first system to make extensive use of them, although they are now appearing almost everywhere.

Typical of the short-cut commands possible with icons are 'save' and 'kill'. In a conventional word processing program the user has to issue a command to cause either of these two operations to take place – often a two or three keystroke command. With a mouse and icon system, the user moves the mouse to the picture of a waste-paper basket and presses the button on the mouse to cause the highlighted text to be killed. Equally, the save-to-disk command is issued by moving the mouse to the picture of a disk. Other icons include a clock, a calculator and pads of blank paper.

Whether using a mouse is faster than issuing instructions via the keyboard depends on how good the user is at using the keyboard and how responsive the keyboard-based program is. I've used a mouse-driven program and I don't feel that icon control could save me much time in writing.

The real use of the mouse is in other computer applications. Managers manipulating bar-charts of sales figures, calculations of projections and text within company reports might well find a mouse a more acceptable method of control than a typewriter-style keyboard and here we come to the heart of the matter; Apple and the other producers of icon-controlled software are trying to provide computer access for those who feel themselves above 'typing'.

In both American and British offices, male executives of all ranks find the idea of typing demeaning. They feel that it is something that belongs to the secretarial class. It is for this reason that

computer manufacturers are trying to find a way of getting these managers to use computers without the requirement of typing. It is the liberated office male today who is happy to be found typing away at a computer terminal.

Writers don't share such hang-ups. I do not see that a mouse is of any great advantage for a writer and the extra money would probably be better spent on a thesaurus program or an on-line encyclopedia.

Integrated software for a standard 16-bit computer

If a writer has an IBM PC or a similar 16-bit machine with sufficient RAM – usually a minimum of 256K – there is a variety of integrated programs which can be bought off the shelf and used as a suite. The writer is forced to use the word processing program supplied with the package, but the advantage is that all the programs in the suite share similar commands. Thus the writer has only to learn a single set of basic commands to use word processing, spreadsheets or a database program. Writers who have been using a word processing program for some time will naturally be reluctant to give up the investment they have made in learning their system on the promise of integrated software. Whether the advantages of using interfacing programs are enough to warrant a re-learning period (apart from the financial cost) depends on what the writer expects to get from the computer.

The more detailed and technical a writer becomes – whether in fiction or in non-fiction – the more the computer can help. Len Deighton and Dorothy Dunnett are both fiction writers who carry out tremendous research before embarking on a novel. For them the advantages of an integrated system which would keep their research on-line while they are writing with a word processing program are obvious. For the novelist who creates everything from life and/or imagination, the advantages are less obvious. Even for this type of writer, however, the facility of a dictionary and thesaurus on-line at the same time as the word processing program ought to be pretty enticing.

Extra 16-bit word processing power

16-bit power brings surprisingly few extras to the ability of word processing programs. Proportional spacing can be shown on the screen (if that is any benefit to a writer) and special characters such as French and Arabic accents can also be shown on screen.

Translation programs on 16-bit systems provide the writer working in foreign languages with immense aid. The ALPS translation system (see Chapter 6) automatically looks up every word in a dictionary (which may be expanded by the user) and offers a translation. The program presents translation options on the screen and the program acts interactively to ask the translator about correct grammatical structures. The writer or translator is able to view both the original and translated text on screen at the same time (windows!) and allow the program to automatically insert all accents and inflections. Just as word processing is taking the physical labour out of writing, so translation programs are taking the physical labour out of translation, but the intellectual decision-making process remains strictly human!

RAM disks

This section title should really read 'RAM storage' but, by a twist of logic, RAM chips which are used for semi-permanent storage are being referred to as 'disks' because they mimic and replace disks at some stages of the operation.

Until very recently it wasn't possible to consider using random access memory in any way other than to run the program. Now that 16- and 32-bit computers can commonly address RAMs of up to one megabyte and, very soon, ten times that amount, the attractive option of using some of that 'instant' memory for text and supplementary program storage becomes possible.

The danger with using RAM for storage is that it is volatile. A loss or fluctuation in electrical current can wipe or scramble the information stored. The advantage of RAM storage is that it is *instant*; a writer wanting to jump from page 3 to page 211 of a manuscript will be able to leap to it immediately. The need to change disks and search for the page is eliminated.

There are several ways of protecting RAM-stored material from 'brown out' (the loss of text because of power failure or fluctuation). The most obvious is to keep a duplicate record of the material stored on a magnetic medium. This pushes the role of storage systems such as the floppy and the hard disk back a pace as they are only used at the beginning and end of a working session. Used in this way, a part of the machine's RAM is buffered (i.e. set aside) to act as storage during work and the user has the advantage of instant access to all the material in hand. At the end of the session,

the system transfers the memory from RAM back to the safer magnetic medium.

Another method of protecting RAM disks is to provide them with an electrical supply which is isolated from the mains and which has a separate 'life support' battery supply. Other methods are being developed. These include the options of 'bubble memory' – a more expensive RAM system which holds a permanent record of memory even when power is switched off – and a trickle system in which the contents of the RAM memory are constantly fed back and forth between magnetic and volatile memories.

Apart from the speed of access in word processing, RAM disks speed up many other processes. When a spelling checker program is run on a file of text stored on a magnetic medium, the text has to be loaded and re-loaded from disk. This takes up most of the time with spelling-checker operations and the typical check time of a minute per thousand words can be cut to one second per thousand if the text and dictionary are held in RAM rather than on magnetic disk. The performance of other programs such as dictionaries, grammar checkers and thesauri is equally affected. Holding a complete dictionary in RAM allows the writer who wishes to check the spelling of a word to press a key, flip into the dictionary program, type an approximation of the word and see an instant display of all words which have similar spellings. If the writer then needs a definition of the word, that can be provided with a single key stroke. After selecting the word, the writer can flip back to the word processing page and insert it. With RAM storage there is no waiting.

Although not yet available on microcomputers, a program called 'Expert Speller' indicates the type of power that will shortly be available. This program runs on minicomputers (the next size up from micros) and it *knows what you meant to type* and inserts what it thinks is the correct word.

Expert Speller is available from:
Artificially Intelligent Devices and Techniques,
8, Cooper Grove Shelf,
Halifax HX3 7RF,
UK.
Price is £500.

The ever more clever computer

Every year it seems as though the computer is usurping more and more human functions. After word processing comes 'idea processing' and 'thought processing'. There are now programs on the market which claim to be able to help you arrange and even generate your ideas and it is said that programs which will generate ideas on their own are not far away.

This last paragraph is likely to increase the membership of the ILA (International Luddite Association), but those familiar with computing will realise that such grand claims fall far short of the truth. Computers can't think up story lines, can't write good dialogue, can't write clear explanations of difficult intellectual concepts and can't produce much humour (at least not intentionally). *They will be able to one day* but that day is still a long way off and it is doubtful whether humans will choose to read computer-generated writing: the human condition, as revealed by computer, will be interesting, however.

Idea processors are 'soft' programs (soft software) which help the writer to organise and assemble disjointed first jottings. The concept of the programs is that they do not work to produce a 'hard' end product such as a neatly typed document, but rather provide a framework in which an idea, or group of ideas, can grow. When the framework is sufficiently developed the words generated can be transferred to a conventional word processing program with its attendant dictionaries, encyclopedias and thesauri to be sharpened up and professionally produced. The idea processor is the computing equivalent of the scraps of paper writers fill when starting books, the envelope backs that get filled with sudden ideas and the sudden rush to the box of paper to block out a novel in outline. The computer offers this 'scratch pad' ability with the promise of holding that information in store for later moulding. I have to say that I do not like the idea of idea processing.

My feeling (and here I may have reached my Luddite threshold) is that book ideas, whether fiction or non-fiction, may occur at any place and at any time and the desperation to formulate those ideas demands that any tool at hand is used. For me, even the activity of walking upstairs to the office, switching on the computer and making a start at tapping out the ideas is likely to be destructive. I'll forget one of the things that has popped into my mind. The arrival of my portable computer (Chapter 11) has made a difference, but I often choose to work on a

scrap of paper just because I don't want the mental activity of operating any machine to collect thoughts: this, I suspect, is the fundamental feeling that is behind the total rejection of word processing by some writers.

In developing thought processing programs the software authors have looked wistfully at the power embodied in financial spreadsheet programs. Writers may be unfamiliar with such programs as VisiCalc (the best-selling spreadsheet program) but the principle is that the user can set up a large number of columns for figures and then enter numbers in these columns which are inter-related. The number of columns (and the number of entries per column) is much larger than the computer screen, and the screen is thought of as a viewing aperture, or window, onto a large sheet which may be moved to look at whatever part of the sheet is required. The numbers entered on the sheet may represent a model of actual transactions. For example, a sales manager may build a financial model of the company's 16-strong sales team which includes their salaries, their expenses, the orders they secure, the commission the sales staff take, etc. When this large model is complete the manager is able to see how much profit is generated when the sales team make (for example) 20 sales a month each worth $500 £500. The beauty of a spreadsheet is that the manager can then experiment with the model and say 'what if?' Altering one factor in the model (perhaps changing the salespeople's cars for more economical models) affects every other related figure and the manager can see *instantly* what effect such a change would have on overall profit. More fundamentally, the manager can play the game of lowering the price of the product but expecting to sell more. Endless equations can be tested in a few minutes – what happens if the commission rate is increased but basic salaries reduced? - and the manager can experiment with a model of the business in a way that *wasn't possible before*, simply because the computer can carry out calculations too lengthy or complex for the human brain.

This explanation of how financial spreadsheets work is necessary in order to explain the goals of the programmers who are seeking to build software which goes beyond simple word processing. Although word processing offers considerable benefits compared to either longhand or typing, it is still concerned with the automation of existing processes. Financial spreadsheets, on the other hand, allow managers to do things that were impossible before.

Programmers now hope to offer this type of facility to those who create words.

The programmers are examining the areas where unformed thoughts start and they are trying to find a way to allow humans to get more out of their own mental processes. The most difficult part of writing is not the preparation of the text, but the generation and organisation of the ideas that lie behind the words. When a writer is developing a novel he or she will be thinking about a character's role in the plot as individual lines of dialogue or description are being written. The word processing program can only manipulate words and phrases, it has no power to emulate the wider relationships which concern the writer. If a program can be given the power to model such character or plot development, how much use will it be to a writer?

There are several programs available which have made a start on this difficult problem. These include 'Thinktank' from Living Videotext in Palo Alto, California, 'Brainstorm' from Caxton Software in London and 'Zyindex' from the Zylab Corporation, Chicago. These programs run on a variety of machines including the Apple IIe, CP/M micros and the IBM PC.

I don't feel that these programs are yet powerful enough to be of use to writers. To some extent, they are designed to help those who do not know how to organise their ideas and most professional writers and journalists would find them rather tiresome. Brainstorm is better described as an 'idea organiser' and it assists the writer in building a model of the article or chapter that is to be written. By writing such headings as 'introduction' and 'paragraphs' the writer begins to build up a structure which will be followed when the actual writing takes place. Topics for inclusion are entered under the various headings and when 'namesakes' (as the key words such as 'paragraph' are called) are used again, the program recognises such headings and automatically organises ideas under the correct heading, cross-referencing as it goes. The program is best regarded as an intelligent notebook and new versions will offer writers more and more facilities.

Zyindex is a program which has some very useful functions. It is a cross between a word processing and a database program and it allows the user to search the developing text for key words. This is a development of the global search function of word processing programs and 'Boolean operators' are allowed. Boolean search terms are 'and', 'or' and 'not'; thus the writer can search the text

for the appearance of a character called 'Holmes' and can specify that the search should only discover those occasions when 'Holmes' and 'Watson' appear together (within 100 words of each other). Equally, the search can be used to discover the points at which 'Holmes' appears without 'Watson'. Zyindex operates by making a 'textbase' of words, automatically excluding 'unimportant' words such as prepositions and conjunctions.

Whether programmers will succeed in their goal of offering writers a program which does things that are impossible for the human mind (in the way that financial spreadsheets do) depends on how well they can analyse its workings. The manipulation of numbers is a firm, easily analysed concept, but thoughts and ideas are intangible, fleeting and often illogical and, as such, may stay outside the programmer's grasp for some time yet.

9

Portable Word Processing

One of the main benefits writers enjoy as a perk of their profession is a free life style. Within reason, they can live anywhere and, if they are very successful, they can choose the most inaccessible places. Arthur C. Clarke's well-publicised sojourn in Sri Lanka is probably an extreme exercise of this freedom and his statement that the follow-up to *2001* would never have been written were it not for his acquisition of a word processor raises an interesting point.

It isn't easy to find service for word processing equipment in Sri Lanka. In Arthur C. Clarke's case he has undoubtedly found a way of ensuring his service and supplies, but it is a fact that the computer places limits on a writer's freedom. Most writers who use computer aid find it of enormous benefit; so great, in fact, that they find it difficult to write without it. In extreme cases some writers claim they would be unable to write if they were forced to return to manual methods, but as Len Deighton illustrates in his story about his return to a manual typewriter for *SSGB* (Chapter 12), most writers could do so, but choose not to.

Len Deighton has described himself as 'trapped' by his word processor. When his family spend time in France he is forced to remain in his house in Ireland simply because that is where his word processor is. If he's away from it, the amount of work that can be done is minimal. Moving a large word processor around is difficult and thus it might be suggested that for all its benefits, computer aid robs writers of their freedom. This has certainly been the case, but now things are changing.

As computer power increases so technologists are finding ways

of packing more ability into smaller packages. Len Deighton is now equipping himself with a portable computer which can travel with him and which can 'dump' onto his main machine in Ireland This portable frees him of the tyranny of the fixed computer and he is again free to write wherever he happens to be.

Portable or transportable

There are two types of portable computer which are useful to writers. Both are *additional* machines, and writers considering computerizing their work should bear in mind that after installing their main computer, it will become an anchor, chaining them to their home base. Freedom from it will only be won by making still further investment by buying a *second* machine. The two types of computer which can free a writer from a permanent work base are called a 'transportable' and a 'portable' computer.

The transportable computer first appeared in 1982 when the American-made Osborne computer was launched. This was, in fact, a desk-top computer which was squeezed into a suitcase-type box. Perhaps best described as 'luggable', the Osborne contained a proper, but tiny, cathode-ray tube screen and twin disk drives. It ran the CP/M operating system and this allowed it to act as a fully-fledged business micro. The two main drawbacks to the Osborne were its tiny screen (five inch) and its weight; it weighed 28lbs and took some lugging. It also ran only on mains power and it was really designed for the executive to take home from the office to continue his or her work.

Many journalists chose to use Osbornes simply because they could move them around the office and take them away when they had to. Since the first Osborne was introduced there have been many new transportables which have improved in power and weight performance, but they *all* require mains power to run and this is a major limitation on their use.

It is possible to use a transportable computer as a main machine (and avoid the expense of buying two), but the trade-off which is necessary to cram a large machine into a small box doesn't provide the very best type of machine for daily use It is more than possible to use a transportable every day for a month, but to choose to use one every day for a year is a misuse of the technology. The value of transportable machines is that they can be packed up easily and carried. They cannot compete with a desk-top system for ease of use.

Perhaps the most important transportable on the market is the IBM PC transportable. Although it is still heavy (30lbs), the dominant market position enjoyed by IBM means that there is a vast range of software available to run on the IBM PPC – the Portable Personal Computer. The system is supplied with a built-in nine inch amber monitor and 256K of RAM. *All* standard IBM software will run on the PPC and this means that a writer using an IBM PC with WordStar, Multi-Mate or any other program could use the same program disks with the transportable.

As always happens, many companies are now producing 'look alike' transportable machines which are said to run all IBM PC software. Caution must be exercised when choosing such a machine as compatibility is by no means universal. The only test which is cast iron is to take your own word processing and other programs along to the computer store and try them out.

Writers using other computer systems have not been deserted. Most major manufacturers are now producing transportable models of their desk-top computers, aware that the freedom they offer produces a new market for existing technology. Writers who use obscure systems or dedicated word processors are unlikely to find transportable versions of their machines and will either have to forego the freedom, or learn a different word processing system to use on the portable machine.

Working with a nine-inch screen is a strain if work is spread over long periods, but the transportable offers similar power to a desk-top micro and full storage of work is possible.

With a transportable a writer can go off on travels and still continue to work. The absence of a printer in a distant hotel room or rented villa means that reading from the screen will be the only method of looking at words, but work can be saved on floppy disks, safety copies can be made and kept until the writer is back at base and can transfer the material back into the mother system. At this point it can be printed out or can be modified in any way the writer chooses.

Sending words back and forth between computers is easy. In Chapter 7 the methods of communication via telephone lines were discussed and the principle of exchanging information between computers is very similar.

If you are seriously interested in computing on the move you might consider subscribing to a new magazine called *Portable Computing*. It is published by Miller/Freeman Publications of San Francisco and is concerned only with portables and transportables. It is available at computer stores and news-stands.

Hard wiring

'Hard wiring' two machines simply means that they are connected by a cable when they are in close proximity, as against the type of connection which takes place at long distance, such as over a telephone line. In this setting the computers can communicate 'pure' data without a modem in the communications chain altering the data into modulated signals.

Most computer communication takes place in the ASCII code. Some compatible computers can exchange text in other codes, but in most instances the procedure for exchanging text is very similar to the on-line system explained in Chapter 7. The two computers are wired together by a six- or seven-way cable connecting their RS-232 ports. This cable is *wired differently* to the cable used for connecting a computer to a modem and a separate cable must be purchased. To wire two computers together the cables must be wired using a 'nul-modem adaptor'. This phrase simply means that the pins in the plugs are wired according to the demands of the computers rather than the modems.

After the two machines are connected, the text is transferred using a communications program (also described in Chapter 7). The main difference in exchanging information between computers when they are 'hard wired' and when they communicate over telephone lines is that the information can be sent much, much faster without the fear of corruption taking place in the phone system. Telephone communications are limited to a top speed of 1200 baud, 120 characters per second. If data is sent faster than this there is the likelihood that the data received will be garbled. When two machines are hard wired the maximum transmission rate is governed only by the program and the hardware in use. The most common rate used for machine-to-machine communication is 9600 baud – 960 cps. At this rate a 10,000 word chapter could, theoretically, be transferred from transportable/

portable computer to desk-top machine in 1.04 minutes.

In practice the transfer of a chapter is likely to take a little longer. Apart from the time taken to plug the machines together, only the larger microcomputers such as those equipped with very large memories – 300K upwards – would be able to store all the text in RAM. Most machines will have to undertake a 'housekeeping' exercise and hold transmission once or twice during the operation to transfer the received text onto disk. In practical terms each 10,000 word chapter takes about five minutes to transfer, but I don't think this is too awful a penalty for the freedom of using a portable machine.

Portables

I fell in love with a new computer during the writing of this book. This is one of the truly portable machines; the NEC 8201A – a tiny book-sized computer which is powered by pen-light batteries and which really is a go-anywhere computer. Despite its small size and remarkably low weight (under four pounds), this machine has word-processing software built into a ROM chip and this means that it is always available for work. Picking it up is like picking up an intelligent notebook and when it is used that way (in conjunction with a desk-top micro) it expands considerably the aid the computer has to offer the writer.

Lap portables (as they are known) such as the NEC-8021A and the very similar Tandy Model 100 and Olivetti M-10 are *not suitable* for major writing tasks. They are 8-bit machines with limited memory and very limited built-in display screens, but they are a most powerful adjunct to a desk-top micro and I choose to use one in preference to a transportable.

The NEC, Tandy and Olivetti machines were developed by the same Japanese design house (Kyocera) and then packaged differently by the companies which produced them. The value of such machines stems from their extreme portability and their built-in programs.

I use my NEC in a wide variety of ways. Part of this chapter was written on the machine when I was in my garden. I don't find this a natural way to work and it was something of an experiment, but I was able to write a few thousand words seated on a bench in bright sunlight and then return to my office, dump the words onto my Radio Shack Model II computer and combine them with the rest of the text being prepared for this chapter.

When I visit libraries for research purposes my NEC always goes with me. I find it a joy to make notes directly onto my little machine (I haven't yet come across a librarian who disapproved of the very slight keyboard noise) and when I get home I transfer the information onto my large machine where it joins the relevant file of notes that I am building for a research project. My NEC accompanies me whenever I travel and I brave the stares of fellow train passengers (they will soon get used to such sights) as I write letters, notes and magazine articles while travelling. The NEC and the other truly portable computers have managed to turn what would otherwise be wasted time into valuable time and I regard this releasing of waste time as a considerable step forward. The ability to leave a meeting and prepare a detailed letter of confirmation before I arrive home is of very considerable benefit and I discovered that the machine paid for itself in a very short time.

The NEC has an excellent keyboard that is a joy to type on. The built-in liquid crystal display screen offers 40 columns across by eight lines down and this allows a paragraph at a time to be viewed. The user can, of course, scroll up and down a piece of text that is in preparation, but I look forward to the day when flat-screen technology has developed to the point where a full 80 column by 25 line screen is fitted to a battery-powered portable computer.

> A company called Crystalvision of Sunnyvale, California, claims to have developed a flat screen of 80 columns by 25 lines which can be fitted to an IBM PC-type portable machine. The low power requirements of flat screens allow a battery supply to be used and take us one step forward to a truly portable computer which is as powerful as a mains-powered model.

The NEC 8201A, for the moment the leading edge in portable technology, can store an impressive amount of text. The machine is supplied with a 16K RAM as standard, but this can be expanded up to 96K. In this configuration 16,000 words can be saved in RAM. The NEC 8201A is fitted with a small nickel cadmium battery which constantly preserves any text held in RAM. When the machine is switched off, the back-up battery can preserve the contents of the memory for around three months. (If you forget to

switch the machine off a built-in program closes the computer down if no keystroke has been entered for ten minutes – data is automatically saved into a file and is protected by the back-up battery.) Although I have produced many thousands of words on my NEC machine I have never lost a word through system failure and in this respect it is more reliable than my desk-based micro.

The NEC is fairly heavy on battery use and goes through a set of four long-life batteries in six hours of continual use. For this reason it is worth buying a mains adaptor for battery powered machines so that it can run on mains power when it is used at base.

The NEC and the other clones of the machine all have the main programs permanently embedded in ROM chips. This means that the programs – word processing, communications, etc. – are available whenever the machine is switched on. There is no need to load a program, it is simply selected from the main directory.

The communications program in the NEC is easy to use and it is used frequently as it makes the interface between it and the larger micro. (A word of warning: when in the 'terminal mode', the NEC 8201 does not automatically turn itself off. It is possible to burn batteries out by accident if the machine is left on with the communication program loaded.)

For writers who feel the slightest bit 'workaholic' or for those who become obsessed with work in hand, the lap portable machines are either a wonder-aid to working more or an even bigger fix of a dangerous drug – I'm not sure which. I do find myself carrying my little computer under my arm wherever I go and the possibility of tapping out a paragraph or two when I'm in a cab, in the bath or waiting to see somebody is often hard to resist.

Some airlines have refused to allow portable computers to be used in-flight. A committee to study the possible electrical interference from portable computers was set up in the United States by the major airlines in 1983, but they have so far not reported. Although microprocessors do emit certain electro-mechanical impulses which might disturb navigational equipment, no hard evidence has yet been offered on this subject.

The lap portables are available for about £450, $600 in basic form and by the time additional memory has been added the cost rises to around £700, $1,000. Although not originally intended for 'stand alone' work, the success of the tiny portables has persuaded the manufacturers to produce peripherals which effectively convert these machines into fully-fledged desk-top micros. Tandy was first

with the announcement of a Disk/Video Interface unit for the Model 100. This £450 $800 unit adds one disk drive and an interface which allows the computer to be used with a proper monitor and this addition would allow a writer to use the Model 100 for extended periods away from base. NEC have gone several better and announced a *battery-powered* disk drive, a battery-powered modem, an interface to allow a professional monitor to be used and a portable dot-matrix printer! This has to be the perfect travelling-kit for the writer on the move. The portable disk drive runs two 3½ inch double-density floppy disks and this unit adds an *extra* 64K of RAM bringing the total NEC 8201 A RAM capacity to 160K. The disks hold 320K, or about 53,000 words (unformatted).

The modem supplied for the NEC is a really neat and compact unit, although only capable of sending and receiving at 30 characters a minute (300 baud), the modem weighs only 1½ ounces and was introduced at a US price of only $79.95.

Software houses are now busily developing programs especially for these little portables. Travelling Software of Seattle has produced a program called 'The Travelling Writer' for the Tandy Model 100, NEC 8201A and Olivetti M-10 portable computers.

This word processing program runs similarly to WordStar and uses the standard WordStar dot commands to provide text formatting features such as tabs, headers, justification, italic and boldface codes. Also included, believe it or not, is a Mail-Merge feature just in case you want to use your tiny portable for a mailing shot while you're travelling.

The Travelling Writer is available from:
Travelling Software,
11050, Fifth Avenue NE,
Seattle,
WA 98125,
USA.
Price is $49.95

Portables are now flooding onto the market and by the time this book is in print writers will have many portable computers to choose from. Typical of the slightly more expensive portables is

the Sharp PC 5000. This machine weighs 12lbs, has an 80 column built-in screen display and a RAM of 128K. The main difference between the Sharp and its competitors is that it uses a 'bubble memory', an alternative type of memory which is non-volatile (i.e. information doesn't disappear when the power is turned off). Additional disk drives are available (although these require mains power) and for £1,400/$2,000 the writer can have a light, easily-carried portable with a large memory store.

Another machine which will be of interest to writers is the Epson PX-8 portable. This computer is a development of the Epson HX-20, the world's first lap portable, and it offers an LCD display of 80 characters by eight lines and a RAM format of 64K, expandable to 180K. Software is not built into this machine, but it supports CP/M and a considerable number of word processing and communications programs are now available for it.

Writers for whom money is no object can already buy a battery-powered portable machine with considerable power. The Gavilan Mobile Computer costs around £3,000/$4,000, but it features a built-in 3.5 inch disk drive, a modem and every possible connection and expansion port all within a package which weighs 9lbs. The Gavilan is a 16-bit machine with 64K RAM as standard. The built-in screen offers 80 columns by 16 lines and the system is capable of offering integrated programs with Lisa-style windows on the screen display and touch control for cursor movement.

Other advanced features on the Gavilan include plug-in program cartridges and expander RAM modules which take built-in RAM up to 288K. The machine can run on MS-DOS which means that it is theoretically possible for the IBM PC's software library to run on the machine but how much of this becomes available depends on the willingness of program houses to create these programs of disk formats the Gavilan can read. Programs already available include WordStar, EasyWriter I (not as good as EasyWriter II!), Travelling Software products and SuperWriter. Power is supplied by a built-in 8-hour rechargeable Ni-cad battery, although the machine can also use mains power when it is available.

Sending it home on the phone

For the writer who really gets to grips with computer technology it is possible to use a portable computer as a remote terminal to the main microcomputer at base. Many portable computers are supplied with a built-in modem and this allows writers to ring home

and 'dump' their work down onto their main machine, even while it is unattended. To make such a link-up possible it is really necessary to have an additional telephone line at home which is made available just for the computer. The alternative is to forego the opportunity of using a telephone-answering machine and give your home telephone line up to the computer.

The main computer at base is fitted with an 'auto answer' modem – a modem which answers incoming phone calls automatically and sends a 'host tone' down the phone line. The writer who is sending material home merely sends a tone in response and then sends the text to be saved along the phone lines. This system is slow for large amounts of text and there is always the chance that some words may become garbled because of imperfections in the telephone system. It also demands that the main computer is left running constantly and that it is fitted with a communication program which automatically saves incoming information to disk.

Despite these apparent difficulties, the concept of the mother computer always being available to accept text at the end of a telephone line is a very comforting one. It is also possible with this configuration to ring home to check a database or examine other text. Certainly before the end of this century writers will be working on small, powerful machines no bigger than a book and with sufficient capacity to store one. They will also be transmitting their words via telephone and cable lines and the auto-answer computer waiting at base will be as common as today's telephone answering machine.

10

Word Processing on a Shoe-string

The major drawback to the wonders of new technology is the expense involved. Few writers make much money and the percentage who do is so small as to be insignificant. Why then promote the concept of computing for writers? The reason is simple: most writers will find that the equipment pays for itself very rapidly and that it will boost their earning power considerably.

Throughout this book the accent has been on 'professional systems' and I have repeatedly urged writers to avoid complicated computer systems which will make writing more difficult rather than easier. All writers will find their initial introduction to computing difficult, but after a few weeks the system they use should become 'transparent', i.e. it should cease to stand between them and the words they produce. Only the best word processing programs make this possible and cheaper systems with inferior programs can actually be a far worse solution for professional writers and journalists than an ordinary typewriter. This chapter, however, is written in recognition of the fact that few writers have £2,000/$3,000 immediately available for the purchase of a computer system. I would urge those who are credit worthy to borrow this sum rather than try to assemble a word processing package on a shoe-string, but the information offered in this chapter acknowledges that it will be impossible for many.

If you intend to assemble a shoe-string computer system, i.e. under £1,000/$1,500, you *must* feel comfortable with technology and you *must* be prepared to invest some time in learning about computer technology itself. *If you are nervous of machinery you would be far better off buying an electronic 'memory' typewriter*

rather than trying to put a word processing package together on a shoe-string budget!

How much?

Assuming that you are ready to wrestle with components that are only semi-compatible and that you are prepared to fight your way through the computer jungle unaided, you will want to know how much you will have to spend to buy a system powerful enough for the sort of serious work required by a writer. You will be using a *home computer* rather than a business machine and the least you can pay *for a complete system* will be about £800/$1,200. The minimum system that will be of use to a writer consists of a 48K RAM computer with a proper keyboard, a professional monitor, one disk drive, a high-quality word processing program and a high-quality dot-matrix printer.

Before you take the plunge and start looking at Commodore 64s and similar machines, think about one alternative: it may be possible to buy a second-hand or obsolete business machine for the same price as a 'built-up' budget system would cost.

Ralph Steadman decided that he needed word processing power at the beginning of 1984. My advice was to buy an IBM PC with one of the better programs – Multi-Mate, WordStar, etc. – but as an artist, Ralph has less writing to do than an author working in words alone. He managed to find a brand new, but obsolete, Tandy/Radio Shack Model II for £900 (with software thrown in) and although he still had to find £250 for a printer he found himself with a fully-professional (and easy to use) word processing system for only a little more than he would have spent on building up a far less powerful 'budget' system from separate components. The question of obsolescence is an interesting one: whether it will matter to you depends on what you expect to do with the computer system in the future. However, this is rather like asking a learner driver whether a Ferrari or family saloon is to be preferred. From the standpoint of the novice, mobility is all and refinements aren't relevant until later.

An obsolete business micro – the Osborne 1, the Superbrain, the Tandy Model II, etc. – is likely to be as powerful

as most budget systems (the Sinclair QL with disks is the obvious exception) and should be considered as a superior alternative to systems built round home micros such as Commodore 64s, Atari 1200 XLs and BBC micros. Business machines are not only easier to use than home micros, they have excellent word processing programs written for them, the one area that is lacking in the home micro market. The problem is finding such obsolete or second-hand machines.

The machines

It is impossible to run the type of word processing program a writer requires on a machine with less than 48K of random access memory. 64K is far more comfortable and many would consider this to be the minimum. The main machines which can be adapted and built up to suit writers are the Apple 11 and 11e, the BBC microcomputer, the Commodore 64, the Atari 1200 XL, the Memotech MTX512 and the Dragon 64. For obvious reasons those cheap computers which are fitted with push-button style keyboards (the Sinclair Spectrum, the Oric, even the IBM Jr.!) aren't really suited for word processing applications.

The Sinclair QL stands out from this list of cheap machines as it offers very serious word processing capability at a price which puts it in the shoe-string league. As it comes bundled with built-in 'stringy floppy' storage units and word-processing software for £400/$499, only a printer is required. A reasonable dot-matrix printer can be had for around £300/$450 (some cheaper) and the complete system can be up and running for under £700/$1,000. It is likely that writers would choose to add a conventional disk drive to the system, but even that (at a cost of around £200/$300) still keeps the QL system within a shoe-string budget. As the QL has an internal RAM of 128K which can be expanded up to 500,000K (and, in time, beyond) this machine must be seen as a very serious option for those writers with limited budgets. I would go so far as to suggest that writers with more money available should try out a QL system before they part with what may be unnecessary money.

The seeming contradiction of the QL – a shoe-string price but a business performance – highlights the dilemma of all who approach the problem of buying a first-time computer system: whether to buy now or wait until the technology becomes cheaper.

There is no simple answer to this as the technology is going to continue getting cheaper, but I would suggest that delay is only worthwhile when a specific product that promises to meet your requirements at an attractive price is about to become available. I think there is little point in waiting until prices fall in general: while you are waiting you could be offsetting any additional price you may have to pay by purchasing now by the increased output the system makes possible.

A hint of what is going to occur: a joint venture has been set up by Digital Research (the originators of the ubiquitous CP/M operating system) and two integrated circuit makers, Zilog and American Microsystems. The aim is to produce one chip which contains the entire CP/M operating system. The chip itself is being developed using computerized chip-design software and although formerly a piece of software aimed at the business use, CP/M on a chip will enable 'serious' computers to be marketed for less than £250/$350. There are over 9,000 pieces of CP/M software available (including dozens of different word processing programs) and the introduction of this chip will push the prices of personal computers down until eventually they are almost at calculator level. Only the screen and keyboard will remain items with an intrinsic raw material cost.

Leaving aside the exception of the QL, most budget systems demand that the writer builds up a system of separate components and handles the compatibility problems which may arise. These problems are many. Some disk drives that are claimed to be compatible may not be. Some word processing programs may work less well on certain machines than on others. Getting a particular printer to work with your home micro can demand a special program to be written.

These are problems which simply cannot be overcome by the novice. A period of learning is required, but this has to be heuristic learning as you won't be able to find anyone to teach you how these things are done. The method of becoming 'computer literate' is to read every book on the subject, to experiment with the hardware, to hang around in computer stores and to visit computer

exhibitions. It can take months or years depending on how serious you are and it is certainly a wasteful distraction for a busy writer. It does seem absurd that there is no help available and I'm afraid you will find very little assistance from most computer dealers. They all find it too easy to sell cheap machines in boxes and unless you are spending £2,000/$3,000 with them you won't get the sort of detailed technical help you need to make sure all the wires go to all the right places. There is one thing of which you can be sure; the manuals supplied with the equipment won't tell and any information you find there is likely to be so technical as to be indecipherable. Going it alone and assembling home micro components for a serious purpose is difficult and time consuming. If you have a friend who understands, bribe him or her to help you, it will be worth it!

One of the home computers which most appeals to impecunious writers is the Commodore 64 This machine was selling for £189/$250 at the time of writing and is likely to be available for even less in the future. One newspaper report has claimed that the computer is built (in the UK factory) for a cost price of £35 which reveals how much headroom there is for reduction.

The main drawback to the Commodore 64 is that its screen display only offers 40 columns across – half the width of a typewritten page. This isn't a real drawback when a user gets used to it, but this is the touchstone of all budget word processing – you will have to get used to the system's idiosyncrasies: writers may not enjoy having to think about the machine's needs as well as the composition of words and thoughts. There is a real danger that the system is so demanding that it will inhibit creative writing. Compromise is the principal element in home computing.

The Commodore 64 has a nice keyboard – something that writers must be careful about (discussed later) – and, of course, a 64K RAM. It is possible, although tedious, to run a word processing system with a single disk drive and two disk drives make life much easier. With a single disk drive in use there is always the temptation not to make a back-up copy of a disk. With a single drive the writer is chained to the machine when a back-up program is running as he or she has to push disks in and out of the drive when necessary. (Note: word processing of use to writers is impossible on a system which uses an audio cassette as a storage medium. It is far too slow.)

Adding a disk drive to a Commodore 64 will add approximately

£200/$300 to the basic price. With a Commodore system you *have* to buy one of the disk drives the company makes as the interface used is unique to Commodore. Other systems use universal interface ports and thus third-party disk drives can be used with Atari, BBC and other machines although they may take a little knowledgeable programming to make them work. The cheaper Commodore disk drives are slow in use and this is noticeable during word processing. This is yet another trade off made for economy. The three items needed to complete the system are the monitor, the word processing program and the printer.

You can't use a domestic TV set as a screen for word processing! Although all home computers can display information on an ordinary TV, the picture quality is not good enough for use when a writer is going to be staring at the screen all day long, so a professional monitor is a vital piece of equipment. High quality monitors are available from £100/$150 upwards and there are no compatibility problems – all plug straight in *providing there is an 'RGB' output on the micro*. RGB is the professional output signal and you must check that there is an RGB or video output port on any home micro you consider buying.

Word processing programs for budget micros are plentiful but it is hard to choose the right one for your needs. Remember that you are trying to gain business-style performance out of a hobbyist set-up and you will have to spend some time evaluating the programs which are mainly designed for home micro owners to use for letter writing. As should have been made clear in Chapter 3, the writer is the most demanding user of word processing and is more likely to discover drawbacks in the program than other users.

The computer dealer who sells you a budget package with a word processing program may reassure you that it is suitable for novel writing, but ask him or her how many similar packages they have sold to writers. If they haven't sold any, they won't know just how hard a writer will make the system work.

There are over twenty different word processing programs for the Commodore 64 alone and these range in price from £40/$60 to £80/$120. Compared against most 'professional' programs such as WordStar which cost over £300/$450, it will be apparent that there must be some differences. However, software is becoming cheaper and the example of the Quill word processing program which (along with three other major programs) is provided 'bundled'

inside the QL's price indicates how quickly the market changes. In practice, if you buy Quill rather than WordStar you get a 128K, twin tape-drive computer thrown in free!

The limitations of word processing programs designed for home computers are typically: limited file length, lack of block move ability and lack of global and dictionary features. Many will be command-driven rather than menu-driven forcing the writer to learn a 'language' to use the word processing program. Some less expensive programs are supplied on a ROM chip which plugs into the computer circuit board. These are convenient to use, but the type of word processing program that can be stored in this way is of limited ability.

Typical of the irritation to be found with home word processing programs is the frequent 'copy protected' formats on which the programs are supplied. Many programs are supplied on disks which cannot be copied – the aim being to stop the hobbyist user copying the program and passing it on illegally. For the professional writer the implication is that if the master disk crashes (if something goes wrong with it) work grinds to a halt. Software houses will supply new disks when the faulty program disk is returned but how many writers can abandon work for a few weeks while this cosy exchange takes place?

You will have to accept some limitations with cheap word processing programs, no matter how carefully you shop. Try to choose one which has a 'fail safe' system of saving text to disk. Programs which leave a large amount of text hanging about in volatile RAM are dangerous and can easily cause work to be lost. Try also to find a program which offers unlimited file lengths. If there isn't one remember you are likely to need a file length capable of holding at least 5,000 words (i.e. 30,000 bytes). Below this it is impossible to build a file that contains a whole chapter.

Some of the home word processing programs even fail to offer 'wrap around', the feature which automatically carries whole words down to the next line. Reading a screen of text with broken words at the end and beginning of lines is a certain hindrance to understanding.

Try to find a word processing program which is menu-driven. As explained in Chapter 3, an easy-to-learn program isn't necessarily what a writer wants: the easier it is to learn the less there is to learn and this argues that the program has fewer features than others. It is difficult to find a good word processing program for

home computers, but not impossible. It demands considerable research however.

One last word about word processing programs: two programs which are particularly good for home computers, but not necessarily for professional writers, are The Bank Street Writer and Edword. The Bank Street Writer is a program which was developed at the Bank Street College of Education in Manhattan and it was originally designed for use by schoolchildren. It is now regarded as being one of the best 'simple' word processing programs available and if you take the approach of buying word processing for your children to use on their microcomputer (a method of discovery many writers are opting for) it is hard to beat this program. The Bank Street Writer is available for the Apple II, the II + or the IIe from:

Broderbund Software,
1938, Fourth Street,
San Rafael,
California,
CA 94901,
USA.
Price: $69.95.

Edword is a word processing program specifically designed for educational use. It is contained in a ROM chip which plugs straight into the British BBC microcomputer. Like the Bank Street Writer, Edword is easy to use and wonderful for children, but isn't really designed to handle the needs of professional writers.

Edword is available from:
CET & Clwyd Technics,
Microprocessor Centre,
Coach House,
Flint,
Clwyd,
UK.
Price: £51.95

The BBC Micro

Many British readers may be tempted to buy a BBC Micro because of the fulsome praise it has received in the press and the wide use made of the computer in education. At present the machine has a maximum RAM capacity of 48K (soon to be expanded) and there are a variety of word processing programs available for it. There are excellent disk drives offered by a variety of manufacturers and the temptation of buying a computer which can offer reasonably good word processing *and* which will serve as a computer which can be used by the children can be overwhelming. There are problems, however.

The main drawback to the BBC computer is its poor keyboard. Those writers who can type will notice a poorly-placed shift lock and other keys placed in danger spots (where they can be accidentally hit). The feel of the keyboard is also less than first class and the general layout not conducive to fast, accurate typing. This is a clear indication that the machine was designed for computing and not for typing.

There aren't any really powerful word processing programs available for the BBC Micro and as the basic micro is expensive at £400 (compare this to the QL, the Commodore 64, etc.) it shouldn't really be a front runner unless use by the children is of paramount importance.

The Apple II and IIe

Unlike most of the other budget micros, the Apple is capable of expansion into a really powerful word processing machine. That the Apple II is still around eight years after its introduction is an amazing tribute to its flexibility; the market usually only tolerates a model for two years.

Warning: If you intend to use an Apple II for a word processor make sure you use an Apple IIe ('e' for enhanced). The keyboard on the Apple II and the Apple II+ is *appalling* and almost unusable for typing. This problem was rectified in the IIe and the newer keyboard is quite good.

Because the Apple has been around so long many independent manufacturers make add-on items for the micro. In its basic form the Apple IIe only displays 40 columns on a screen, but add-on circuit boards quickly convert this to a proper 80 column display.

There are dozens of word processing programs available for the Apple IIe and although the system must be regarded as a little dated (especially when compared with a machine such as the QL) it can offer a worthwhile budget package.

Of the other budget machines many will offer some form of word processing and it may be tempting to start with a basic, inexpensive computer intending to build up the system – adding items like additional disk drives and a better monitor – as you get more cash. This is a technique to be avoided as the overall cost of a system capable of running word processing at a level required for professional writing is likely to be far higher than the cost of a proper business system. It is definitely worth trying to borrow the money to buy a full power system to start with.

The printer

In all budget word processing packages the printer has to be of the dot matrix type: a letter-quality printer remains far too expensive. As mentioned in Chapter 4, it would seem that daisy-wheel printers are getting cheaper every month, but almost without exception cheap daisy-wheel printers are painfully slow and there's nothing more able to remind a writer that he or she is using a budget system than a printer which types slower than you can.

There is some resistance to dot matrix printers among editors, of course, but in general they are agreed that it is the older printers that really cause the problems New machines are likely to produce text that is highly readable and the phrase to look out for in advertising literature is 'correspondence quality'. A dot matrix printer capable of producing characters from closely packed dots will be more than satisfactory for a writer's output. They are reliable and fast, even when relatively inexpensive, and a dot matrix printer for £300 $500 is *definitely* to be preferred to a letter-quality printer of the same price. As printers drop in price this relative differential will remain and pound for pound, dollar for dollar, the dot matrix is a better bet for all those who don't have to produce finished text with a 'perfect' appearance.

On-line power

Budget systems based around home computers will deny you access to the sort of sophisticated aids described in Chapter 8. It isn't possible to use integrated software, large database storage and major dictionary, grammar and thesaurus programs on an 8-bit hobby micro – no matter how much it is expanded. The exception, of course, is the Sinclair QL: this machine promises all these features.

One thing that is possible with *all micros* is on-line research. Once an RS-232 port and a modem are attached to a micro running a communication program the whole world of information is available. The only limitation that may be experienced with a shoe-string system is that the storage of information gathered may be slow, but a £200/$300 home computer is every bit as good at 'talking' to the giant mainframes and getting them to perform their stunning party tricks as the most expensive business system.

For writers who choose not to use a word processor there is a persuasive case to be made out for using a home computer for research purposes. Writers may retain their hang-ups about 'how they write' but the value of computerized information-gathering cannot be denied.

11

The Word Processor and the Publisher

The computer is as much a revolution for book publishers as it is for writers. But while writers embrace new technology in rapidly increasing numbers, many publishers are either putting their heads in the sand or actually running away.

There are some notable exceptions, but to the majority of book publishers the arrival of the word processor has been very unwelcome. Publishing is a gentlemanly industry in which conservatism rules. Many publishers feel that they were doing quite well before the microcomputer arrived, thank you very much, and they don't feel any necessity to get excited about such new-fangled gadgets. The real problem is that the technology is shifting control *away from the publisher and to the author.*

Once a keystroke has been captured electronically almost anything can happen to it. This includes electronic transmission over telephone or cable lines and the translation of that keystroke into type. Even the tiniest £60/$75 microcomputer stores text in a form that can automatically generate type in a computer-controlled typesetting machine. The result is not only the need for a new set of working practices inside publishing and printing but for a far more fundamental shift of attitude. A major part of a publisher's role has always been the job of getting the manuscript into type, attending to editing and overseeing its production. That role is now rapidly declining and as the power of new technology increases, so the author's microcomputer and the printer's typesetting machine move closer and closer together. This is likely to force publishers to adopt a changed role in which the accent is placed on acquisitions, editing, marketing and promotion.

Many publishers fear computers. Editors of long experience are afraid that they will have to learn how to operate computers in order to edit work on screens. They would prefer to stick to the now nonsensical method of carefully identifying an error or style aberration in text, marking the paper manuscript for alteration and passing it to a typesetter to carry out the work. The prospect of actually being able to make the correction at the moment of discovery does not appeal to many of the editors to whom I've spoken despite the fact that the work has to be done twice over by traditional methods. Many editors feel, in some way, that reading paper manuscripts is an acceptable occupation but sitting in front of computer screens is not.

Those publishers who have decided to embrace new technology face considerable difficulties. One is the training of in-house staff. Editors have to be trained to use computers and word processors, but which system should be adopted? Whichever is chosen it is certain that the next author to walk through the door will be using a different, incompatible system, and this problem is holding back those houses which are willing to embrace the computer age. Methods of overcoming compatibility problems are discussed later in this chapter.

Other staff also have to be trained in the use of computers. Designers and production staff have to be able to use the machines. Many book designers feel unhappy at the prospect of 'weighing' a book in an electronic form. Their usual method of design is to sit down with a paper manuscript and come to an idea about how to present it graphically, based on the way the paper looks to them. They look for the number of cross heads, they scan the text for 'boxes' and other elements which they can use to liven up wedges of text. They cast off (match a type size to available space from a character count) from the manuscript and they get a feel for the book in this way. In time, a greater number of book designers will feel at home with a screen, but this visual side of the production process will probably go on requiring a paper copy of the manuscript for many years. A designer has to have full physical control of a manuscript in order to do the job properly and I feel that at this moment this is only possible with paper.

More trouble than it's worth?

The publishing staff who come up against the problems of electronic manuscripts most often are the commissioning editors. They are

coming under enormous pressures as an increasing number of published authors enthuse about word processing. Once an author realises how beneficial the technology is, he or she is likely to want to extend that power. This extension covers the provision of disks instead of paper to publishers when the text is due, methods of long-distance text transmission and direct typesetting from authors' disks.

American publishers have had more experience of dealing with word processor-armed authors than houses in other countries. Here are some views from New York commissioning editors.

Neil Nyren, Athenaeum Press: 'We do accept manuscripts in disk form, but we always ask for a paper copy as well. One of the main problems in using authors' disks to generate type is that the codes the author has used to indicate such elements as underlines are not readable. We often find that commas aren't read by the typesetter and sometimes whole paragraphs are missed out and they have to be inserted afterwards.

'If we get authors to do the editing corrections on their disks they say that they find it a mind-breaking effort and, of course, we can't be sure that it has all been done. Additionally, authors are tempted to make changes to their copy when they are editing for us so that we often get disks back which contain text which bears little relationship to the manuscript we originally received. Because authors often don't mark the changes on disk, the printers don't know what is meant to be there and what isn't.

'I think that at the moment taking machine-readable disks from authors is more trouble than it's worth. I have found that despite my enthusiasm, the headaches I have given my production department have turned them into Luddites and at the moment they are very anti the idea of authors with word processors.

'If the system worked it would definitely save money, probably about $2,000 on an average manuscript. At the moment, however, the many corrections that need to be made soak up all the savings and really don't make it worth while.'

Bill Strachan, Viking Press: 'About a third to a half of my authors are using word processors, but this is a very recent development. So recent, in fact, that many manuscripts I am receiving now, started out on typewriters and switched to word processors while they were being written.

'So far I have not come across one failure, not one writer who has started out with a word processor and has rejected it; they

become fanatical converts. Editors are ambivalent on the subject – we just don't know what we can do. It is rare for editors to have worked with word processors themselves and I think a lot of them are scared.

'One problem with authors' word processing is dot matrix printers. They produce manuscripts which are very hard to read. Some houses are now refusing to accept manuscripts prepared on dot matrix printers. Although I find I can read them, some people complain.

'One of the biggest problems with taking type from machine-readable disks is design. If the design department is operating differently, they can't design a book as they would from hard copy. That has created a lot of problems.

'We always ask for a second hard copy manuscript when authors return corrected disks. We are developing a direct line to typesetters in New Jersey. We've been looking around and we've discovered one house which offers the greatest flexibility for handling different disk formats and we're now sending authors' disks from our office directly to them.

'We've developed a questionnaire for authors with word processors and we find out which format they are using, which machine and which word processing program in advance. That helps us gear up for the day when their disks arrive.

'At the moment I wouldn't call the system a significant advance over hard copy, but it is certainly the way things are going.'

Bob Mecoy, Dell Publishing, New York: 'There's no real advantage in taking machine-readable disks from authors at the minute. My production department is not yet set up to provide hard specifications or to add comment codes to disks, although we've tinkered with the subject.

'It seems that WordStar and the IBM PC is becoming the most common system in use and that's what we are using in-house. We'll take disks on that format and edit them here. About a third of my authors are using word processing at this minute and that's growing fast. When I went to the Pacific Northwest Writers' conference in Seattle recently it seemed that a question about word processing came up second or third at every meeting.

'I don't mind reading dot matrix copy personally, but my production department has problems. On older dot matrix printers the impression varies from character to character and the type becomes light. This causes problems for the typesetter who's read-

ing it and as a result the type comes back full of inaccuracies and we get an additional bill for hardship typesetting costs.

'Nearly all the authors who get a word processor find it a great success. I know of one exception, however. A best-selling lady author in her fifties who writes mystery stories went out and spent thousands of dollars on a word processing system. Two days later she took it round and gave it to a charity. She said writers should only work with paper.'

Getting rid of the typesetter

The captured keystroke has enormous power. It can be transmitted around the world in a microsecond, it can be manipulated as though it is greased – pushed aside, modified and re-formed at will. The electronic keystroke contained in a writer's word processor is all that is necessary for communication. From here it can be sent on phone wires as electronic mail or it can control a machine which produces type. The person whose main skill is in putting keystrokes into a typesetting machine is, therefore, redundant.

The statement above is a harsh analysis of the current situation. In theory, the typesetter - or compositor – is no longer needed when a keystroke has been originated electronically. In practice, there is a need for skilled intervention to ensure that the electronic mediums mate successfully and the keystrokes include the necessary instruction codes which cause the typesetting machine to add line breaks, paragraph indentations, bold text, underlinings, etc. But the skill required to ensure this is not the same skill as that possessed by a trained compositor. He or she is trained for accurate keyboard skills, tight concentration and an ability to create type in tight schedules. These are the skills that are becoming redundant.

For many, this is the unacceptable face of new technology. Writers have only been using word processors extensively since 1980 and it is unacceptable that an entire trade could become extinct in half a decade. However, that is precisely what is happening.

British newspaper owners have allowed print unions in Fleet Street to hold back the threat of new technology. American newspapers have been installing computer-controlled typesetting since the late sixties. During the seventies they extended the computer domain right up to the reporters' desk. The majority of American newspapers are created from reporters' keystrokes, while nearly all British newspapers still cling to manual typesetting from paper copy. Fleet Street still supports the traditional hot-metal type-

setting that has been in use for two centuries! While Fleet Street's deteriorating press scrambles to print 'micro columns' in the hope of attracting advertising revenue, many editors and sub-editors hope to have retired before new technology eventually reaches their office.

The unions cannot hold new technology back for much longer, however. The pressure is now coming from the originators of information - the writers and journalists – not just from owners who want increased profitability.

It is not right to throw a worker on the scrapheap just because a machine is invented that can replace his or her skill. The problem that printers and publishers face is that there will shortly be nothing for these workers to do. At the time of writing there is still sufficient paper-based copy generated to keep the majority of typesetters employed. By the end of the eighties this will not be so, and typesetters will face the choice of re-training to learn another skill, or giving up work.

As a desperate attempt to demonstrate the inevitability of new technology, the British Newspaper Society (the association which represents the owners of Britain's major newspapers) have produced a newspaper called *The Daily Leader* which was prepared and typeset entirely on computer. The paper is produced periodically at print exhibitions and similar events, and demonstrates to the Luddite-like print unions the benefits of 'the full and sensible use of new technology' as the Newspaper Society sees it. The issue is redundant keystroking, and British newspaper owners look in envy at American and European newspapers where it is the journalist's keystroke which eventually generates type. In Britain nearly all newspaper text is created from two keystrokes; the journalist's and the compositor's. The newspaper was created by six journalists with no human intervention between them and the printing press. The Newspaper Society suggests that if British provincial newspapers are allowed to introduce such technology by the unions, a regional newspaper could survive on a circulation of only 30,000, whereas double keystroke technology demands that the circulation must be between 60,000 and 100,000.

The situation in print is a microcosm of the larger problem that computerization is causing throughout the industrialised world. Understandably, unions will fight vigorous rearguard actions to save jobs, but I consider that the revolution is unstoppable. Writers using computers have no intention of depriving a typesetter of a living, indeed I know several writers who use word processing and refuse to supply disks with their paper manuscripts for this reason. But competition will shortly ensure that all publishers will be keen to take machine-readable disks from authors.

In the USA, it is possible to save up to 50 per cent on the cost of typesetting a book when authors' disks are prepared carefully. Teething troubles are currently eroding much of this saving and as Neil Nyren said above, the corrections and re-corrections presently necessary with the system soak up much of the potential saving. That will not be the problem for long. As editors in publishing houses learn to add print control codes to electronic manuscripts and to carry out their editing on screen (instead of expecting authors to make the corrections) the disks that typesetting houses receive will be easier to read by machine and will be much more accurate. That 50 per cent saving will become a reality and the result will be cheaper books. Competition will cause all mainstream publishers to take advantage of the system.

In Britain, the print unions are more successful at protecting their members. This is because Britain is generally more unionised than the USA and also because it is much easier to organise a national response to an employment problem in a small country than in a large one. Many British typesetting houses are accepting machine-readable disks for setting, but restrictive practices make it almost impossible for publishers to save money by using this method. The main union, the NGA, has instructed its members not to accept text over the phone. The workers have either to take the disks from the publisher and find some way to make them compatible with the typesetting computer or they must make a direct 'hard wired' link between the typesetter's and the author's (or publisher's) computer. The reason for this is simple. Once text is in a form suitable for transmission by phone line, *it can be read by any system*. This completely solves the problem of non-compatibility between various makes of computer. Outlawing such transmission ensures that compatibility problems survive and jobs are saved but it deprives the industry of the most efficient way of communicating electronic information. How long this ban will hold

is open to surmise. Once British publishers realise how easy it is to send text via a phone or land line to the USA or Hong Kong, they will not be too concerned with the NGA ban. (Phone transmission is discussed later in this chapter.)

Printers in the USA are beginning to realise what a powerful means of transmission the phone system is. Many small print houses are now advertising their willingness to accept keystrokes in this way. Typical of these new companies in TeleTypesetting of Ann Arbor in Michigan. In 1983 this company offered phone-captured typesetting at half the cost of conventional systems. A 8.5 inch by 11 inch page of copy was costed at $6.

Type Share in Downey, California, is another company keen to exploit telecommunications. Customers can choose to have four or six inch wide galleys and when keystrokes are delivered by phone the company was charging $4 and $6 per foot respectively.

Most typesetting houses set up for telecommunications are able to take keystrokes from electronic mail boxes such as The Source or CompuServe Many have established their own mail address with these services and this allows writers on the other side of America, or indeed, anywhere in the world, to dump copy for setting without incurring long-distance phone charges. These companies are pleased to supply customers with codes for setting column widths, typestyle and other specifications and it is the writer's responsibility to insert these codes into the text that is sent.

I delivered a book to a UK publisher in machine-readable form in 1982 My publisher and I regarded the operation as an experiment and the level of discussion and consultation with the publisher's production team was such that it swiftly became an uneconomic process for me.

My publishers were completely unable to secure a cost saving by using this method. All the typesetting houses approached in Britain indicated that they would much rather take a standard paper manuscript and set it conventionally, and the estimates they supplied reflected this. Despite the lack of cost advantage, my editor

and I wanted to press on with the experiment and a typesetting company was found who assured us that they could 'milk' my machine of the text. They visited my home and extracted a chapter to prove their point.

I provided a paper manuscript to the publisher as they had no computers in-house and this was returned to me marked up as though for a typesetter. I had to go through my 80,000 word text page by page and adjust my manuscript accordingly, making the many changes of style and punctuation my editor wanted. I found that an appalling job. Like most writers, I experience a wonderful feeling of relief when a manuscript is delivered to a publisher and, after hearing that it is acceptable, I don't want to see it again until it is in page proof. I want to have a rest and then start thinking about the next book.

Finding the text back on screen for correction a month later was a depressing experience and the correction task was very time-consuming. I was paid no extra for the week or so the work took and I printed out a new paper copy of the manuscript (more additional expense) and returned it along with the original marked-up manuscript to the publisher. I later found out that this new corrected manuscript was never looked at. Editors feel that once they have ordered a correction to be done, it is somehow divinely carried out. I now know that I missed at least two of the corrections specified by the editor, but by the end of my week's correcting I couldn't have cared less.

The typesetters who were due to take the text from my machine telephoned to ask me about my print control codes. I explained the codes that I used in my word processing program and they considered that they could work from the same code, e.g. a paragraph break is always followed by an indentation and underlining is shown by __.

The typesetters travelled over 100 miles to visit my home. I had spent a day converting my word processing files into ASCII files (see section on telecommunications for explanation) and on the morning appointed they arrived with their 'black box' and data disk. In computer jargon a black box is a device for effecting an interface between two foreign items of equipment. Their plan was to copy the text from my machine onto their own disks. We spent the day trying to make the connection work. Despite the fact they had visited my house a few weeks earlier and successfully 'down loaded' text, they failed to collect the data at the crucial point.

They had felt so confident that they had left their 'technical man' behind and without a knowledge of the interior architecture of their black box and disk drive, I was in no position to help. The upshot was that they left with my original disks under their arm.

It took them two weeks to extract the keystrokes from my disks. They managed it eventually by persuading a local computer dealer to let them use a computer similar to my own in his showroom where they (with the expert in attendance this time) carried out the milking process. It took them four hours.

That wasn't the end of the problems. The designer at the publishing house had decided to go straight to page proof, by-passing the galley stage at which the pagination is decided and the pictures laid in. The result was a dreadful slab design which was created by a disgruntled typesetter.

The APS-5 phototypesetting machine did not read all my print control codes. All the soft hyphens I had used (I was still luxuriating in the ability to produce justified text at that time) had been converted into hard hyphens and many weird spaces had appeared in the text. These had to be corrected from page proof and this made the exercise more expensive and time-consuming than conventional setting.

Because of the difficulties the typesetters had experienced the production schedule was way behind and despite my bleats of alarm, only those corrections which would not alter the pagination were made. The book looked appalling. It had cost the publishers far more than they would have spent normally and the process had cost me so much time I didn't care to calculate my financial loss. But it was an experience.

Such difficulties are being encountered throughout publishing at present and in many cases they are bad enough to make editors decide to ignore the 'benefits' of new technology and stick to tried and tested methods. As is always the case, it is not the technology at fault, but the humans controlling it.

Electronic rights

Few writers or publishers realise the importance of electronic rights to their work. No mention of electronic rights appears in the contract which governs this book's publication, yet electronic rights are likely to become one of the most profitable means of exploiting publishing during the next few years.

The subject of commercial electronic databases is covered more fully in Chapter 7, but to develop my point about electronic rights it is necessary to explain that these multiplying facilities are able to store a vast amount of information at various locations around the world. One database in the USA is called *Books In Print*. Users can telephone this database and using their own inexpensive microcomputer can search this database for entries under an author's name or under a subject heading. At the moment the database stores the title, author and publisher of the work. Researchers can capture this information in their own home system and can manipulate it electronically and/or print it out. When the researcher has finished searching the database, the system works out the costs incurred during the search and the user is billed automatically. At present, the researcher then has to borrow or buy the books which seem suitable in order to see the complete text.

Nearly all books pass through a stage of electronic keystrokes at one time. Even conventionally-produced books are usually set on a computer-controlled phototypesetter and these electronic keystrokes are identical in potential to those created in a word processor. As we have seen, once a keystroke becomes electronic, there is no end to the ways it can be used.

It is possible to store the complete text of every book produced on a database. If a database had sufficient storage space, the keystrokes created by the writer on a word processor or by a typesetter at a phototypesetting machine could be directly and very cheaply transferred into permanent electronic storage. A researcher scanning a database could ask to see sections of such a script and could search it with 'key words' provided by a database. In this way a researcher would be able to extract the relevant parts of a book very quickly, would be able to capture the text on his or her own home computer and would be able to manipulate it at will.

Clearly, the author and publisher of a book must receive some payment each time this happens. But if the researcher has an electronic copy or partial copy of the text what is to prevent that being copied or transmitted from one home database to another?

While I was writing this section, I received a call from Ben Wooley, the former editor of the British magazine *Computer Answers* The magazine had been approached by a publisher to produce an

'index guide' compendium of published articles. The magazine stored all used material in electronic form and Ben's call was to ask how much I wanted for my electronic words to be re-used in this form. We agreed terms easily, but I asked for time to think about electronic rights. *Computer Answers* runs a 'bulletin board', an information and news exchange database, and there was a possibility that the text of the re-prints would be made available in electronic form over the phone lines. The ramifications of such availability are immense.

Computer storage systems are becoming more powerful and less expensive every month. By the end of the eighties it will be feasible for databases to store complete books 'on-line'. In practice such databases are likely to be subject-selective and a surgeon who wants to find out about a particular treatment will tap into a medical publications database and down load all relevant information for study.

How much should the author of the work receive each time someone 'down loads' the words? Should it be the full price of the book, as though the researcher had bought it from a bookshop (the researcher certainly has the words stored permanently) or should it correspond to a library lending right? These are the questions that authors, authors' associations and publishers must address very soon.

Producing machine-readable disks

Computer-controlled typesetting has been in use for about fifteen years and it has now become very powerful and flexible. The computer-controlled typesetting machine is able to insert a wide variety of 'control codes' into text which cause the program to carry out certain functions; e.g. changing type size, face, format, etc. The writer with a word processor will not be able to use as many codes. The codes in use are likely to be limited to those for such everyday operations as paragraph indentations, underlinings, double underlinings and bold text. Many other codes are required for professional typesetting. Leaving aside the codes which will decide which typeface and size are to be used, typeset text often uses italicised words and special positions such as 'centering' and 'reverse indent'. Additional codes are needed for hyphenations, justification, margins, leading and many other variables.

Prefis, a British company, has spent several years developing a hardware software package especially for authors, publishers and typesetting houses. Probably the most ambitious project of its kind in the world, the Prefis system is called 'The Book Machine' and requires the user to purchase a specially-adapted Victor 9000 ACT Sirius computer plus a special software package.

This system was produced by a team which included the best-selling novelist Desmond Bagley and as well as offering powerful embedded control codes for typesetting, the system allows a wide variety of type styles to be viewed *on the microcomputer screen*. This system enables designers as well as editors to work from electronic copy.

Special features of The Book Machine software include auto-indexing, word counts, vocabulary control, windowing (to allow the drafts to be viewed simultaneously), and seven different on-screen typestyles.

Prefis is at:
64, Baldock Street,
Ware,
Hertfordshire SG12 9DT,
UK.
Book Machine prices start at £4,577.

Most computer-controlled typesetting machines are programmable and if the typesetting house and the publisher (or author) can agree on a common set of codes, the typesetting machine can be programmed to centre all text surrounded by a # (for example) or to italicise all words surrounded by a *. Setting up a program in the typesetting machine to translate authors' codes into codes recognisable by the typesetting system is called establishing a 'Translation Table' and once created, it will work automatically on all text supplied in that format.

There are many small problems that must be addressed by this Translation Table. It is unlikely that the line lengths used by writers and publishers on their micro-based word processors will be the same length as used in the typesetting machine. The controls which are automatically added to word processing programs to cause words to 'wrap round' at the end of the line have to be

interpreted - usually as a space, allowing the typesetting equipment to adjust lines to its own length.

The microcomputer industry is now setting about developing general compatibility programs. 'Move It' from Wolf Software Systems of Canoga Park, California is a program which 'mates' information between computers running CP/M, MP/MII, CP/M-86, MP/M-86 and PC-DOS even when the disk formats used are different. The program allows programs to be exchanged between these formats as well as text files.

Wolf Software Systems is at:
28342, Archwood Street,
Canoga Park,
California CA 91307,
USA.
'Move It' costs $150 for the IBM PC and $100 for all others.

Many typesetting houses have now created a set of translation tables that work with the most popular word processing programs – e.g. WordStar. Their existence means that the editor in the publishing house can ignore the codes the author has used and need only add the special codes which control type-face, size, format, etc.

The many special symbols found in typesetting which do not appear on standard computer keyboards need to be called by mutually agreed codes. These include arithmetic fractions, small format capital letters, algebraic and geometric symbols and many other special characters.

Graphic Typesetting Services of Los Angeles, California have developed their computer/typesetter interface to the point where they have produced a manual for authors who want to send their word processing keystrokes to type. Called 'User Manual For the StarSet Automated Typesetting System', the 29 page manual tells writers who use the WordStar program (up to version 3.01) how to insert codes into their manuscripts which will control the company's typesetting equipment.

The basic rule for all writers who intend to supply machine-readable disks for typesetting purposes is *keep it simple*. The more word processing embellishments that are used in the creation of the text, the more likely they are to confuse a typesetting computer. *Don't* justify text. The soft hyphens that appear in word processing text will cause many problems. Because the typesetting machine has different line lengths, the hyphenated words will appear in the mid-dle of a line and will have to be corrected manually.

Although the elimination of the typesetter theoretically means that no new errors will be introduced between text and type, this is not always the case. Even the best translation table will sometimes cause an additional space to be inserted or will break a word incorrectly. For this reason it is *not* possible to eliminate the reading of page proofs, even when the text to be set has been thoroughly read and corrected.

The Association of American Publishers has established an electronic publishing sub-committee to set up an American standard for machine-readable text. This study is costing $250,000 and should result in a common system used throughout the USA. The British Printing Industries Federation and Printing Industries Research Association are working to produce a British standard. Why there can't be an international standard defeats me and it seems clear that the UK industry must accept the power and weight of the US publishing industry in this context.

If you plan to create machine-readable disks for a project, *contact your publisher first*. This will save considerable re-keying time at a later stage. Adopting the use of special 'flags' for control codes – perhaps a [b] for bold – will ensure that you don't have to go back through the text and replace the word processing program's own codes with those readable by the typesetter. There is more work for the author in preparing a machine-readable text if the publisher is unwilling or unable to add the codes in-house. As the publisher's editor will have to read a version of the text, it seems sensible for the process of encoding to be done at that stage, as though an editor were marking up a paper manuscript in the conventional way.

The Association of American Publishers has produced guidelines for authors preparing machine-readable text in situations where no translation table exists for the word processing program in use. In paraphrase these are:

1. Be consistent in text. If a paragraph starts with five indentation spaces, always use five indentation spaces.
2. Do not use any special commands such as centering. Add a previously-agreed code to the text – e.g. [c] ~ before and after the text string to be centred.
3. Don't justify text and use only 'hard' hyphens, i.e. those used in portmanteau phrases such as machine-readable.
4. Don't add underlining. Use a previously-agreed code such as [u].
5. Never hit 'enter' or 'return' within a paragraph. Save this command for the times when a new paragraph must be created. All typesetting systems read the 'enter' and 'return' codes as new paragraph commands.
6. Use double quotation marks – " – for quotes, not single marks ('), even though quotes will probably appear single in type. (The system can't differentiate between apostrophes ' and single quotes '.)
7. Be sure not to use the characters i or I for 1. This is something that typists tend to do, but you can imagine the result on a typesetting system.

The typesetting house which will receive your text will supply you with the list of codes to be used. If you haven't worked with typesetting before you'll be astonished at the number of variable and associated codes. Adding this to a completed manuscript is a rotten job and their use certainly interrupts the flow of writing. It is mainly for this reason that I believe that encoding should take place at the publishing house.

One last sad comment about the viability of machine-readable text must be made. There is considerable spare capacity in typesetting houses in Britain and many other countries. While this situation persists, managers are often prepared to take on setting jobs at far below cost prices and many publishers are being saved from the need to explore new technology simply because they can buy so cheaply in conventional typesetting houses. This situation will not last long, however, and those publishers who have invested in an exploration of electronic publishing will enjoy a considerable advantage.

Methods of text transmission

Getting a manuscript to a publisher used to mean either delivering two copies of a manuscript by hand or sending them by registered post. The vulnerability of paper was always a worry for writers and this aspect has its counterpart in the computer age – the 'system crash'. Although it sounds like the sort of story writers tell, a friend of mine really did leave the only copy of a manuscript for a novel on the bus and it was never recovered (and he never re-wrote it!).

Today a computerate writer with a switched-on publisher can deliver words in several ways. Many publishers still demand paper copy, but this is often accompanied by disks which allow in-house editing and transmission to type. The most efficient method is to use electronic mail.

The subject of computer telecommunications is covered in Chapter 7, but the national electronic mail systems are ideal for 'dumping' text for publishers.

In the USA, The Source (the marvellous database operated by *Readers' Digest*) is becoming a clearing house for many writers. In Britain the equivalent is Telecom Gold or Micronet. The writer calls the database and 'down loads' the text into the database. The publishers can ring the database and retrieve it when they choose.

The drawbacks to the system are several. The poor quality of phone lines limits transmission speeds to 120 characters per second. This limitation effectively means that a 60,000 word manuscript would take about ninety minutes to send – allowing for file manipulation and error checking.

If such a transmission were carried out at local telephone rates (or over one of the dedicated data networks such as Tymnet and Telenet [USA] or Dialnet and PPS [UK]) at an off-peak time it would still work out a lot cheaper than taking a manuscript along to a photo-copy shop and sending the copies to the publisher. The publisher does have to produce a print out of the manuscript when it is received in the office, however, and this costs time and money.

In practical terms, commercial databases are good for dumping short articles, but are impractical for full manuscripts. It is far preferable to send the text electronically direct to the recipient.

Many computer magazines are now offering contributors the chance to submit articles via 'bulletin boards'. These boards are small micro-controlled databases which provide an information and electronic mail service for readers and they are efficient at capturing a 2,000 word article and supplying it directly to the sub-editors.

The American National Composition Association reports that of its 750 member companies about three quarters are now able to accept keystrokes from authors' and publishers' computers. The cost saving when type is prepared in this way is estimated at between 20 and 25 per cent, on average, but the main benefit claimed for the system is a much faster turnaround time.

In the past book publishers have been more interested in cost saving than in fast turnaround time, but in certain areas · computer book publishing is one · speed is now of the essence and providing computer keystrokes to printers halves the time normally taken to set a manuscript.

Far fewer publishers are able to accept electronic text over the phone. The software necessary for a publisher's computer to accept text isn't expensive, but the system expertise is and only a few specialist houses have invested in 'on line' systems at the time of writing.

The most favoured methods of data transmission at present are hard wiring and 'black box' milking. The ideal situation in which the writer and the publisher use the same computer systems with the same word processing program rarely exists. Usually text is obtained by the direct connection of the writer's micro to another computer – hard wiring – or by the milking of text from the writer's computer to disks running in a black box which is capable of being adapted to accept data in a variety of formats.

The one universal format which can be relied on is the ASCII code. Most word processing programs have facilities for translating text files into ASCII files and once text exists in this form, it can be transmitted as ASCII to other computers which can read ASCII and convert that text back into a file form suitable for its internal system.

ASCII is the code used in telephone transmission and although it usually takes up more disk space than text files formatted according to the word processing program, it provides a convenient means of communication. A book which occupies three 8 inch disks when stored as normal text files will require six similar disks when the files are stored in ASCII form.

The writer whose publisher does not have a compatible computer

system is faced with the choice of taking his or her computer to the publisher for the connection and transfer to take place, or of allowing the publisher or the printer to visit home and milk the machine on the premises.

One alternative which some publishers are adopting is called a 'multi-disk reader'. This is a device which is able to read disks written in a variety of formats and if a publisher has invested in one or more of these machines, the writer may be able to post the disks and allow the publisher to extract the text. The problem is that although multi-disk readers are becoming less expensive and, therefore, more common, the range of disk sizes, as well as disk formats, is increasing. An 8 inch multi-disk reader obviously can't read a 5¼ inch disk. Three inch disks require yet another machine and users of Sinclair's QL with MicroDrives are still not catered for.

One answer to the problem of interfacing incompatible disk systems is to transfer the disk codes onto paper tape. Dwan Typography of Nevada City in California uses an Altos microcomputer (which has the ability to read a wide variety of 8 inch disks) to produce paper tape which can be read by computer-driven phototypesetting machines. The paper tape format is almost universal among typesetting machines and although an additional stage is introduced, the conversion of the keystrokes into paper overcomes most of the compatibility problems.

Clearly there has to be a way of making machines compatible. The transmission of text in ASCII form over phone lines becomes more sensible when the difficulties of hard-wire compatibility are examined. Publishers will not be able to lay down one word processing format and demand all writers adhere to it. If a best-selling author has got used to one system, he or she will probably refuse to change just to help a publisher create a standard. Writers don't change a hard-learned system easily.

Electronic editing

The problem of editing electronic copy has been covered earlier in this chapter, but a reprise of this theme is definitely worthwhile.

Publishers who have investigated the electronic transfer of text

often point an accusing finger at the author who is unwilling to carry out editing tasks on a manuscript. In my researches I have heard editors complain that writers don't always implement the corrections marked on the paper copy of the manuscript. This may sometimes be due to inefficiency on the part of the writer the skills needed for editing are very different to those required for writing but often the writer rebels at a cut or an insertion made by the editor. In a situation where the writer has the task of making the actual changes to the text, it is naive to think the editor's wishes will always be carried out to the letter.

Editors complain about a worse trend; some writers actually amend their text while correcting!

This shouldn't surprise editors. Writers are never convinced that a book is finished and if a manuscript is taken away for a few weeks and then produced again, the temptation to modify or up-date can be overwhelming.

The problem with writers adding new text during the correction stage is that the new material won't have been through the editor's hand. At best this means that the text may not follow the house style in presentation terms and, at worst, it may mean that the writer loses continuity or accidentally includes a libel.

On the other side of the coin, if editors undertake in-house editing it is possible for them to make alterations to a manuscript which aren't drawn to the author's attention. The provision of proofs to an author is no guarantee that he or she will notice a change and this can have a quite serious effect.

It should be clear from the above that I believe that the corrections to electronic copy should be done inside the publishing house *but* editors should supply authors with a clear indication of every correction that has been made I believe that publishers have a duty to train their staff in the technology writers are using and that writers should not have to become editors and type correctors in addition to their role as originator.

One publishing house that has really got to grips with new technology is Osborne/McGraw-Hill of Berkley, California. This house specialises in computer books and is able to accept many different types of disk from authors. The house has developed a transfer system which creates a new disk compatible with the company's typesetting equipment. The stipu-

lation which Osborne/McGraw-Hill places on authors' disks is that they must be single-density and soft-sectored. The editors in the house edit on screen and add the necessary typesetting codes as they go.

In the USA nearly 40 per cent of manuscripts submitted to publishers at the time of writing were created on word processors In Britain the figure is nearer 15 per cent. But this percentage is growing each year and experts predict that over half of the professional writers in Britain and the USA will be using word processors by the end of 1985.

Producing art work with word processing

Writers concerned with publishing their own work will benefit greatly from the computer's power to produce formatted print. The desirability of programs which can produce multi-column formats was discussed earlier, but the word processor has many other features which can help the writer/publisher.

Text produced on a daisy-wheel printer is almost as clear as proper type. The limitations of face size and style are obvious, but for a straightforward job such as a newsletter or local magazine, the type quality is certainly good enough to serve as art work

One British publishing house anxious to offer microcomputer setting facilities to clients is Budget Typesetting of London This company produces a publication called *Typesetting News* which explains all the details about interfacing your micro with their typesetting equipment. Budget suggest that direct setting can save both time and money.

Budget Typesetting Ltd.,
21, High Street,
London SE20 7HJ,
UK.
Telephone: 01-659 6622

If a publication is designed with the word processor output in mind, it is easily possible to print text and on a standard photocopy reduction (usually 50 per cent) produce a sheet of text suitable for

the printer. Word processing is easy to format to allow holes for pictures to be slotted in and much of the cost of small-publication production can be eliminated by using a word processor in this way. In practice, such a publication would probably have been produced from mimeographed copies of a poor typewriter face and the increase in quality achieved with a word processor is quite startling.

One exciting development which is just on the horizon is digital picture composition. Computerized newspapers have been using computer-generated pictures for some time, but the falling costs of microprocessors and the introduction of inexpensive memories mean that this facility is about to become available for the individual writer. A machine capable of handling such a task is Sinclair's QL with its wonderful 32-bit video map.

Working with a system which handles pictures and text will allow much art work to be created on computer. This is 'screen paste up' and it will mean that publishers and writers who take on that role will be able to create a finished page on screen and either print it from a printer/plotter or pass it to a typesetting machine.

At the time of writing, such a system is still just round the corner, but its arrival will further serve to place control in the hands of the writer and shift it away from the publisher and printer.

Selling your work with word processing help

As well as being wonderful as a writing tool, a computer is very useful when it comes to selling work. Some writers are lucky enough to have an established relationship with publishers which ensures a steady market for their words. This section will be irrelevant to them. Newer writers may have to put their words in front of as many buyers as possible and it is here that the computer can help.

Nearly all word processing programs have a mailing facility. This section of the program allows the user to create a list of names and addresses (e.g. editors of magazines) and then create a single letter in the program. By coding the letter appropriately, the program will produce a personalised letter to each of the editors on the list which can be sent with the article or book being offered for publication.

It is easy to spot the computer-personalised letters which have been prepared with insufficient care. Some programs with a limited mailing element are unable to handle long names. This is why 'junk mail' often arrives with your name truncated. Mr Higginbottom

must often receive letters which start 'Dear Mr Higginbot'. Such gaffes become funnier when the name is encoded to reappear in the text: 'you are a long and valued customer, Mr Higginbot, and . . .' Mr Higginbottom might be forgiven for doubting that the company regards him in this way if they fail to program their system to address him properly. Most people feel cheated by such a mistake, as though the use of their name in such a way violates the idea of a personal relationship.

If you only want to send six letters to accompany six copies of an article you intend to submit simultaneously, it is not worth creating a mailing list. It is easy with word processing to write one letter and then add the change of address each time you want to print a further letter. Sending articles to a larger number of publications – or proposals to publishing houses or agents – is aided by a mailing list, but take care to set it up properly and take measures to remove the most obvious signs of computer mailing.

Printing the letters on a dot-matrix printer is an instant give-away and if this is the only type of printer you have you'll have to accept that the recipients won't react as though they have received a personal letter. If you have a daisy-wheel printer, you can disguise the letter to the extent that nobody could guess its origin.

Don't justify text. Always leave a ragged right margin. Consider inserting a 'typing error' – the perfect typewritten letter is very rare. Personalise your letter in curious ways; insert the recipient's name in the text in such a way that it seems natural. Don't overdo this, that can be equally damning. Use written date lines such as January 1st, not computer date print outs and use nice stationery which has your address properly printed at the top. Don't use the system's automatic page numbering facility if the letter has to be longer than one page; this carefully centred digit is also a give-away to those who know.

Finally, *be sure to tell the recipient that you are also submitting the copy elsewhere*! This might seem a contradiction to the computer-detection measures outlined above, but it is very important. It is quite permissible to produce computer-based letters with care in order to overcome the frequent prejudice about computer-mail many editors have, but you will only cause yourself trouble and harm your reputation if you do not tell the editor the terms on which the material is offered. The embarrassment of turning down offers when the editor has thought the material was

offered exclusively more than outweighs any slight advantage to be gained by deception.

Agents

Agents don't have the foggiest idea what computers can do for the writer. A few computer-specialist agents have sprung up on both sides of the Atlantic, but their expertise is in selling the books, not in computers. I have not yet come across an agent who offers an electronic mail service, nor an agent who really understands the implications of the computer revolution. Some agents are using word processors in their offices, but these are almost always in secretarial hands and are never fully exploited. The idea of ringing up your agent and dumping the latest proposal on to his or her office computer is very enticing for writers who are familiar with computing. Regretfully, I think it will be some time before this becomes possible.

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Writers and Their Word Processors

Dorothy Dunnett Dorothy Dunnett is one of the most widely-read of contemporary novelists. She writes thrillers and historical novels and she has been using a word processor since 1982. Unlike many writers, she decided to computerize her research and administration before realising the creative power the word processor had to offer. She was also unusual in that she carefully analysed her writing and administration needs before deciding to buy a word processor and photocopier to mechanise her complex working life. The first book she wrote on a word processor was *Dolly and The Bird of Paradise*.

'I suppose I have become the statutory female author-owner of a word processor and computer. When I first went to enquire about a computer I was a minority user; no one knew what to do with me. At the moment popular computers are being designed for use at home by the small businessman, as an adjunct to his office. Some of my problems are the same as his, but some are not.

'A house isn't the most convenient place to work from unless there is a housekeeper to act as cleaner, doorkeeper, maintenance staff and caterer, in other words, a wife – if you're a man. You also need a secretary to field telephone calls, buy the stationery, take the letters to the pillar box and the parcels to the post office, and go to the bank.

'I don't have a housekeeper or a secretary, and I reckoned I needed all the mechanisation I could get to make up for the time I waste doing what an office staff would normally do. I also wanted

reliable mechanisation, because I don't work from nine to six, five days a week. I needed maintenance men on contract calls outside of these hours.

'During the day I'm often dealing with the problems of the household, with telephone calls and with visitors. The work an author does is fitted around other people's normal working time, and it can be at its heaviest after office hours, at weekends and through the night – which is one reason why secretarial help isn't of much use.

'All authors need clearly printed copies of their work – and a lot of them quickly. They need to deal with the correspondence that their books generate, and to file copies of it. They need to keep and file the raw material for their books according to subject. And if, like me, they're involved with research work of any kind, they probably need help to analyse their stored material.

'I decided I had to study my own work methods to find out what was needed. Before you walk out and get yourself a computer for something outside of the normal run of office work, you have to decide, in order of priority, what your worst problems are; which bits of your routine are too slow, or too expensive, too demanding or which just produce poor results.

'My handwriting is terrible. Whether I'm producing a thriller, or whether I'm writing a historical novel, I want to be able to sit down and invent the story straight into a form of type that can be read easily, checked over easily, amended easily and also counted for length.

'As soon as it's reached its final form, I need instant and perfect copies of the whole book for myself, for my agent and, at the very least, for my British and American publishers. For a historical novel in double spacing this means I might have to have, in type or print, up to a thousand pages of foolscap for each copy of the manuscript.

'Until 1982 I wrote my books on a golfball electric typewriter. It was less tiring than a mechanical typewriter and although I'm not a trained typist it made my uneven touch even. It even let me use italics. But my typing is almost as bad as my handwriting. I made a lot of mistakes which had to be corrected. I changed my mind here and there while I was writing, and had to re-type or sub-edit in ink. The final result could never have gone to a publisher, even if I'd had enough copies. It had to be sent to a professional typist who turned out one perfect top copy and carbons

which got less and less readable. It took three weeks to a month to finish it.

'My copy-typist, the best I've ever found, moved from Edinburgh, where I live, to Manchester a few years ago. I went on having her type all my books, since she could read my amendments better than anyone else, but it meant sending my only copy of the manuscript to Manchester by post, chapter by chapter and then receiving by parcel post all the typed copies in return. On one occasion a manuscript chapter got lost in the post, although it did turn up three weeks later. Once the newly-typed copies reached me on the island of Aran, where I was staying, in the same bag as a burst tin of treacle, and every page had to be sponged down before it could be sent to the publisher.

'With the last book I wrote before I bought a word processor it was even worse. I was still writing the final chapters when I took my only manuscript to New York for my agent to sell to one of the several publishers who were interested. In order to get enough copies to hand around, the manuscript had to be photocopied as it was, and one publisher bought it on that basis. But before it could be printed, it had to be clean-typed because it was still just a messy first draft.

'On my return, it had to go to Manchester to be typed, again resulting in one good top copy and several indifferent carbons, which is a bit dicey when it comes to deciding which publisher should be favoured with the best version. It took three weeks to a month to have that done, holding up everything, and the total cost of copying that book ready for publishing was between one and two thousand pounds. I realised then that it was nonsense – the system was far too slow, too expensive and still inadequate. That had to be improved for the next book.

'The next problem I analysed was my correspondence The launching of a new book always generates a lot of letters. You and your agent are discussing deals, the publisher is talking of format and prefaces and maps and jackets and blurbs and lists of people to be invited to the launching party. As my books are published in America there is three-cornered correspondence about things like choice of type and transatlantic spelling. Because of the time difference, I often have to work late on letters for New York and rush to the post office to get them off by Datapost.

'As well as new books being published, there are old ones being revised and re-published, with lists of corrections to be made up

and sent off, as well as all the same problems to do with end-papers and jackets and blurbs. I knew that there was no way that these letters could be done professionally for me; I have to type them myself as and when I can, with extra copies for filing. I'm also landed with the huge correspondence that results from my fan mail. I now have something like a thousand people writing to me regularly from all over the world. If they sent standard letters of comment, or standard enquiries, then a standard reply letter might be possible. Unfortunately, they don't. They write at great length, discussing their theories about different aspects of the historical novels. In particular they ask for details about the poetry or the music or the historical facts they are interested in. They also ask me to suggest itineraries for their visits to Scotland, they want me to trace Scottish ancestors for them, they enquire if they may call at my house to have books signed and they tell me about their illnesses and bereavements and families, and the children and animals they have called after characters in my books.

'The variety of letters is endless and only one thing is constant – every letter needs a separate reply. And a carbon copy with a filing system which makes sure that if they write again three years later, I remember that this is the person whose mother was dying of cancer, or who is President Carter's first cousin, or who sends stamps from Goodna, Australia to the children. All the names and addresses of these correspondents have to be stored somewhere. I lodged them finally in an alphabetical index book, each with a different number. But I realised that a better arrangement was needed.

'Sometimes I get an unsigned letter from someone saying "This is your Philadelphia correspondent". But I might have twelve Philadelphia correspondents. I didn't want necessarily to tell her about the others and make her feel one of a crowd, but if I could pick all the Philadelphians out, I could recognise which one she was from the handwriting. Also, people sometimes beg to be put in touch with other fans in the same area. It was obvious that in any system I brought in it would be an advantage to be able to categorise mail by the writer's place of residence and by country. This would also help export managers plan their distribution of forthcoming books and be useful for possible mail shots connected with new novels or spin-offs.

'There was also another sort of filing I had to face; the filing of all the facts needed before a historical novel could be produced. I

had written seven of these by the time I was considering installing a computer system and I had never really licked the problem of the storage and retrieval of material. Six of these books were in serial form, dealing with the same period in the sixteenth century, so the collection of facts was cumulative over fifteen years, and had to be recorded in a form permanent enough to last all that time.

'Sometimes it is possible to buy books, read them and simply flag the items that are important. Mostly reference books for early periods have to be borrowed or read in reference libraries and the passages you need copied out into big notebooks, indexed at the beginning. Loose-leaf notebooks became a refinement, for I could sometimes shuffle subjects together. On the whole it was very difficult to get together in one place all the notes on any one subject. They were collected over a period of years and from all sorts of sources. In the course of one morning in the British Library I might fill a large book with paragraphs on dozens of quite different subjects and it would be impossible to find time to rewrite them and separate them out.

'So my notes stayed in their notebooks and I had to run through them over and over, and flag and index them My reading list for a recent novel was seven hundred books long and that should provide an idea of the volume of material I have to digest.

'I had to consider how all this could be better stored and more easily categorised and retrieved, and if it was ever going to be possible or worthwhile to transfer all the written notes in future into typed form. I also wondered whether the raw material of research, the names of people and places, could be mechanically analysed, instead of being the subject of weeks and weeks of laborious mental gymnastics.

'I took my problems to Strathclyde University and the answer I was given was as follows. For my letters and the writing of my novels, I required a word processor. For the storage of archive material and its sorting I required a word processor and computer of reasonable capacity which would do what I wanted of it quickly and which would have built-in safeguards so that material was unlikely to be lost. They also suggested that I buy a photocopier, as the use of a printer with this type of system is expensive. This would allow me to make extra copies of my manuscripts and correspondence.

'I finally decided to buy a Wang 5-111 dedicated word processing

system and a Sharp photocopier with a maintenance contract for both covering weekend and evening service so that an emergency breakdown close to a publishing deadline could be dealt with.

'Before I decided on the Wang I did a little testing of the water. I looked at smaller computers and I put my problems to their salesmen. It was extremely difficult to persuade salesmen of word processors and photocopiers to put themselves in my place and suggest how their equipment could help me. They had been trained to sell machines for large businesses with typing pools, or to small businesses mostly for stock-taking. No matter what I said to them, they forced me into categories they knew already.

'They assumed I was a typist and therefore didn't explain the keyboard or the typing jargon. They assumed I was interested in statistical records and insisted on telling me all about the various tabulating systems. They decided that I probably wanted to send out variable letters to a standard mailing list and they spent a long time explaining how this could be done.

'I asked if it was possible to put an occasional word into italics, and caused great consternation. A page in italics was easy; you just changed the daisy wheel on the printer, having warned it to stop at the right place. Odd words in italic were difficult. How often, they asked me, did I propose to use a word in italics? Twice in every page? Ten times in three pages?

'Of course, the number of occasions in a novel when one may decide to use italics really can't be computerized, and I had to say so. The final verdict was that I should have to forego italics, unless for a very long passage.

'To be fair, one or two firms did get the idea that if I were writing a novel on a word processor, I should want an editing facility. It was at this stage that I learned that I could mechanically repair an error throughout the entire manuscript.

'Like most writers, I can forget details about a character between the beginning of a book and the end. Sometimes I get the character's name wrong or someone who started out with hair of one colour may end up with another. It is a laborious business to put it right.

'It was one of the early salesmen who pointed out the search facility on most of these computers. That means that halfway through a book if a brown-eyed hero suddenly appears with blue eyes you can tell the machine to search and change and all the blues get turned back into browns. It was one of my sons who

observed the drawback and remarked that I looked like being the only novelist in the world whose characters lived under brown skies.

'I decided that I needed official advice from the University and until salesmanship training is much improved it seems to be that this will always be advisable. The word processor itself I took on trust since it's far too complex for a layman to judge its capabilities. All you can do is work out whether you can afford it or not

'The photocopier I chose from a shortlist by virtually ignoring the standard prints used for demonstration and supplying some very minute and detailed handwritten tables of my own as an exercise for the machine. The one that copied them best was the one I chose, in conjunction with the agent's readiness to service the machine at unorthodox hours. In fact, they equipped their engineers with bleepers so that I shouldn't be stranded at a critical moment.

'The machines were delivered in August 1982 and it was interesting to see how the Wang agents, in particular, have fought a very worthy battle, sometimes winning, sometimes losing, to remember that they are dealing with a private individual and not a firm.

'Attendance at a training course is normally included in the price of Wang equipment. Instead, they suggested that their training officer should give me personal training at home, since it was obvious that what I needed to know was rather different from the standard instruction. I had two full days working at the machine with this operator.

'I don't know which of us was more tired at the end of each session. She had to keep remembering to omit the routines that were of no use to me and not to take for granted that I had typing and secretarial skills. I had to try to spot, out of all the things she was telling me, what would be of use in my work, and get her to think about that aspect of the machine's capacity, listen to my problem, and work out ways of exploiting that side of the machine for my purposes. For instance, she produced in the Glossary, and eventually as a document in the systems disk itself, some of the phrases I used most often in my replies to readers. "I'm so glad you have been enjoying the Lymond books. . . ." or "I'm so sorry that time doesn't allow me to correspond with you . . ." Even "Yours sincerely" and my name, reduced to a formula that I could copy, became a great time-saver.

'I found the automatic format for letters was for the business

practice of typing your correspondent's name in the top left-hand corner, whereas my private notepaper needed it in the left-hand corner at the end. She prepared a new disk with a new format and solved that problem.

'She showed me how to set the printer for double spacing, and how to number the pages automatically - enormously important in a new document. She also showed me how to ensure the right number of lines per page, whether I was using my own notepaper, fancy publisher's notepaper, or A4 for my books.

'The centering facility was very important in giving a professional look to documents. The facility for redeeming mistakes, in typing or anything else, before the document was printed out was utterly incredible. I could tinker as much as I pleased and be sure of a clean perfect print out at the end.

'I asked her how to avoid the bore of re-typing a name and address for an envelope and she showed me how to create an extra page at the end of each letter and get the machine to copy the name and address onto it. I print out the letter, put the envelope into the printer and print it out at the same time. Then, of course, as every letter is completed, I make a file copy of it on the photocopier.

'I showed her my alphabetical list of readers, and she showed me how to type them in a double screen format that would print out on A3 paper, with all the category information I needed about country of origin and so on. She then showed me how to use a sorting disk so that I could have all these names automatically sorted by country, producing lists of all my readers in Australia, in South Africa, in Canada or wherever I needed in seconds.

'She also showed me how to prepare archive disks and, having typed out the chapter of my book, or my research material, coded as necessary, to relegate them to the archives where they would be kept safely until they were needed.

'Wisely, she decreed that the training periods should be separated by a week or two in which I could experiment with the machine on my own, confirming what I knew, discovering what I had forgotten, devising my own ways round some problems and failing to find answers to others. Then, when she came back, I knew just what to ask her.

'What I learned, as much as anything, is how adaptable the machine is. No one could claim, I think, that the operating instructions are models of clarity, or that they cover anything but the

barest essentials. But as you learn how the machine works, and begin to rely less on those user-friendly codes and get to know the sequence it seems to operate by, you can get it to do quite a lot of things that are not in the handbook at all.

'It's as well not to experiment with a document so precious that it would be a disaster if you lost it. But there was one occasion when I didn't know how to get the machine to do what I wanted; and, although the solution I found was laborious, I did find one. That was in my very early days with the machine, and it happened when I was asked to produce a shooting script for a documentary film. A shooting script is typed in two columns. On one side you have the spoken commentary and the sound-track noises and on the other you describe what the camera sees.

'I hadn't discovered yet how to type and print out two columns of text on one page with the paragraphs of left-hand text and right-hand text properly related to each other. The way I did it is too complex to mention and when I described it to the training officer she went white at the very idea; but it worked. She has since typed me out a set of instructions to follow if I ever need to do that again. But what was interesting was that there was no word of that in the handbook, and yet a way could be found – indeed mine and hers, which was much better.

'The programming of the machine is, of course, still geared to office use primarily. It is a minor nuisance not to be able to switch on and start work without having to find out and type the date and time first. Tables of material to do with working times and the name of the operator are also irrelevant and a slight irritation. I sigh sometimes to be told the number of keystrokes I have devoted to a chapter when what I really need to know is the number of words.

'On the other hand, I have had a number of successes. I am asked from time to time to speak by the Arts Council. I can type and file on an archive disk a basic speech and retrieve and adapt it as I please, with a clean print out every time. At last, I have new VAT invoice forms with no trouble whenever I want to print them out. I have now devised a series of paragraphs relating to news of forthcoming books and accounts of research on previous ones which won't be standard for long, but at least save me the labour of thinking out and retyping these answers afresh every time.

'I have a running curriculum vitae which I can use in response to reference book enquiries – a surprisingly frequent nuisance. I

have on an archive disk all the details I need about the appearance and characteristics of Johnson Johnson, the undercover agent who appears in all my mystery stories. I also have all the statistics relating to his yacht, the *Dolly*, which in the past I had to discover by reading through all my own previous books to find out.

'I find the best way to write with a word processor is chapter by chapter on the systems disk and then file it immediately to an archive disk, after taking a rough print out which lets me view all the chapter quickly at once. The ability to chop and change as I wish is miraculous and, I think, tends towards better writing.

'With traditional methods you do think twice before making a change that involves a lot of retyping or messy pen alteration. With this, you simply run your fingers over the keys to see how it looks; you can experiment at will with no effort

'An electrician came to install a new meter once and I found to my horror that he had switched the power off at the mains while my new chapter was still sitting there on the screen. When the power came on again, the chapter was still sitting there, untouched. This, I'm told, is one of the advantages of the more expensive models. It is worth it. A flicker in the public electricity supply, or an over-full systems disk, can cause you to lose text, however. This only happens at the 'insertion stage', when you wipe the screen clear of its current text to insert extra material. If the electricity fails for a split second, you lose the wiped out text the machine is holding in its memory.

'It is also quiet to operate in the house because the keys make almost no sound and are easy on the fingers. The printer drones, but it is only one printer in a room with heavy carpet and curtains which absorb most of the sound. There have been one or two working snags which have been serviced promptly and ribbons and accessories are promptly delivered to the door. These do tend to be delivered without warning, however, as the assumption is that you are working during office hours and not out buying fish or giving a lift to a schoolboy. On the other hand, chance visitors who think that writing books is something to do, like knitting, in your spare time in front of the television are very impressed by the flashing green lights and can sometimes be persuaded that you really are rather busy.

'I use continuous paper for the final print outs of books so that I don't have to hang over the printer all day. I'm now collecting historical material for the next series of novels, set this time in the

fifteenth century. The photocopier will help with books that are now out of print and which I can borrow. There will, I think, always be a place for loose-leaf files of documents from this source, and for books bought and annotated.

'The bulk of my background material I copy-type in coded paragraphs according to subject, e.g. under 'social customs' would come food, dress, travel and outbuildings, each section easily added to as more facts emerge. Other categories would deal with events and people and topographical details. Most of it should never need to be printed out, but simply run on the screen before writing the relevant chapter. Since I have up to ten books to write on this period, I should end up with a very healthy tray-load of archive disks, being added to all the time. And there's another bonus in that. I should be able to trace any item to its source on demand, which is something I don't often have time to do at present.

'There is, too, the business of analysis. For a book I wrote recently on Macbeth, I set myself the task of finding out the origins of a group of Normans who left Macbeth's court on the Welsh border in the time of Edward the Confessor. One of them was called Osbern Pentecost, and another was a close friend or a kinsman of his called Hugh. The puzzle was to find out what part of Normandy or Brittany they came from, who they were and, if possible, why they went north. And all that I could find out about them was that Osbern Pentecost had a nephew called Alfred of Marlborough. What I did was to analyse every character of the period I could find from northern France looking for just that triangle: uncle Osbern, nephew Alfred and friend or kinsman, Hugh. In fact, I found three families that filled the description, and by a further process narrowed it down to the likeliest, but the matching of relationships and characteristics and property and everything else that went towards that piece of research took weeks and weeks.

'It was during that period, in fact, that someone said to me "You need a computer". It's an irony perhaps, then, that what I have used my computer for mostly is writing with, and I am only now beginning to feed historical data into it.

'It may be that the time will come when I wish that the facilities for sorting and analysis were more elaborate, and indeed it is possible to visualise a system where text can be encoded, tabulated and sifted in the way that statistics are now.

'If one were to invent a dream word processor, it would have a

screen which showed much more text at one time and which didn't repeat text at the top of every new screen. That's a convenience for the typist, but it interrupts an author re-reading and testing the flow of a long piece of work. And it makes it very difficult to count words.

'How nice it would be to have words mechanically counted instead of keystrokes. How nice it would be to have italics at the touch of a key and in the same way to ask the keyboard to provide accents over vowels as well as halves and quarter signs, dollar and pound signs and signs for a new paragraph – without having to change the daisy wheel.

'Another advantage would be to have an easy system whereby one could obliterate a passage that was going badly, but somehow keep it on record, to be reviewed at the touch of a button. At present, all too often, I confidently alter something I've written, and then have second thoughts later – but I can't retrieve it: it has gone for ever, unlike a change to a printed page.

'The machinery isn't easy to fit into a home, of course. It's meant for an office with space and special desks, wiring, lighting, a floor that will take wheels easily and with filing cabinets and laying areas all to hand.

'I have quite a large study with a lot of electric points, but the floor is carpeted and there is only normal domestic lighting. Because the walls are covered with bookshelves, the central space has to hold my desk with its "in" trays and telephones, my photocopier, my filing cabinet and my typing chair. I am tackling the problem of housing the word processor on a table of its own, with special lighting and space on either side for the notebooks and files that I'm working from. I'm also going to have a filing system for archive disks immediately to hand so that I can pick out and review earlier chapters fast and easily without getting up. I'm also going to need longer electrical cables so that the carpet can be Hoovered without accidentally pulling out every plug in the machines.

'There's another problem. Unless you are going to waste time changing system disks, you have to chop your material up into fragments and file them as separate documents, in order to leave room on the disk you are using. With a long mailing list, for example, this can be irritating. It can also be a nuisance when it is only a matter of minor amendment, when all one wishes to recall is a single page, not the whole document.

'With a novel, it has to be filed away as separate chapters. It

means that you can never retrieve more than a few chapters at a time, and look at them, or your systems disks would overflow. It also means that your chapters are filed in their archive disk under widely different numbers, which have to be looked up all the time. To retrieve Chapter 1 of my current book, I have to ask the archive disk for No. 0016B. To get hold of Chapter 2, I have to look up my printed index list, which I have to keep reprinting to keep it up-to-date, and ask for document number 0124B. The machine numbers each document consecutively, of course, but I have written and wiped off a hundred letters between the two chapters. I could meet this by keeping a separate systems disk for my book, but I haven't time to keep changing them. What I do at present is book my unwritten chapters by assigning them consecutive numbers, so that at least I don't have to look up my index for each one.

'On the subject of indexes, I don't need to know the name of the operator or any of the subsidiary details, but I would like a bigger space for putting in the title of the document I'm writing so that the index tells me much more about it than there is room for just now.

'I'm not much interested either in how many times a document was revised or the dates on which it was printed out, but I should find it very interesting to know the exact work hours I put in on each chapter, and cumulatively on a book, and the dates on which I began and finished each section.

'I could also do with a different arrangement for headers and footers and repagination. I never need headings on any but the first page of a document, but everything I write could do with automatic repagination, including letters, beginning at the foot of page 1. There is a facility on the machine for reviewing everything in a document and making page lengths uniform for pagination and printing out, but it gets practically worn out with me. An author working on a chapter is revising, adding, subtracting text right up to the last moment of the print out. How nice it would be if the page length and the page numbers altered themselves automatically with every change and then no longer would I set the printer off and find it happily printing on and on off the end of every other page, and doing my printer roller no good at all.

'If this sounds as though I have reservations about having acquired a word processor, I don't. Its advantages outweigh the disadvantages every time and all the time. I'm aware too, that

every alteration I've mentioned could probably be produced, as of this moment, in a custom-built machine, but the cost, I'm sure, would be high simply because the demand is at present limited.

'As secretarial help becomes more expensive – and, it must be said, not always more literate – I can see greater numbers of writers looking towards this sort of mechanical aid in producing their books and their letters.

'My word processor doesn't say "Try again" quite so often now and there are times when I am three instructions ahead of it.'

Terence Feely Terence Feely is an internationally-known writer for TV and theatre. Responsible for such TV dramas as *Number 10*, *The Gentle Touch* and *Affairs of the Heart*, he also writes film screen-plays and novels, his most recent novel being *Limelight*. He has had five plays produced in the West End.

He installed 'Sophie', his word processing system, in early 1983.

'I first got my word processor in April 1983. You hear that magic phrase about computers; "they're getting cheaper all the time" and that's what I was waiting for them to do. But then it's like anything, if you don't get on the escalator at some point you probably never will. I realised that I couldn't go on waiting and decided to take the plunge.

'It was my accountant who actually encouraged me to get a word processor in the beginning. He's got about three in his office and I went along and spoke to his girls. I asked them how often they had had a breakdown. They told me they'd never had one.

'I was pretty familiar with the idea of word processing because I'm lucky enough to know a genuine computer genius, a consultant. The whole of his basement is filled with computers, word processors and so on. His wife is also a writer – Shirley Van Eyssen. She told me just how much it had helped her, and her husband convinced me that there was no need to be frightened of it.

'I was a little nervous at the beginning. I thought there was a great deal to go wrong with such a complex system. He convinced me there was nothing to be nervous of simply by letting me mess about with his machines.

'I actually found it easier to start with word processing than I anticipated because I did not have to undo the boxes and put it all together myself. Somebody came and did that for me so I didn't

have the trauma of making sure the right plugs went into the right slots and so on.

'I also found the training easier than I thought it was going to be. I had thought, "I'm not going to pick up something like that very quickly", but in fact I found I picked it up very fast. It was when I was abandoned, afterwards, that the problems started.

'I had my hand held for two days of initial training. I'm still having my hand held in effect because I've got a hot line: if I get a panic problem there's always someone I can ring who's sitting there in front of the same machine. It's like talking down an astronaut – which is very comforting. Occasionally they say, "Well, you've got yourself into a kind of loop and there's no way out". All you can do is try again.

'I'm using a Xerox 821 microcomputer with a program called WordStar and it's damned good I would say the program is "user-friendly". I don't think I would have been able to learn it just from the manual, however, I needed someone to provide personal help. My advice would always be to have a training period; don't try to go it alone.

'The people who supplied the equipment also supplied the training and there was no pain in the process. They also supplied two manuals, one a big CP/M manual relating to other functions of the machine, which they told me not to look at. I haven't done so yet. The second was a word processing manual. I know that if I had not had the two-day training, reading that word processing manual would have been a real chore. If ever I have to go to the manual now, I have to read a paragraph a couple of times before I actually relate it to the machine. It's not instant and if I had been left with the manual and the machine all by myself, I think the learning process would have taken much longer.

'I suppose it took me about two months' regular use before I felt totally easy with the system and I could stop thinking about what I was doing. Before that I spent a lot of time cursing. In the beginning it slowed up my production considerably. I switched straight onto the word processor when it arrived, I knew it would be fatal to keep using the typewriter. I thought, "that's the way not to learn to drive a car, to rush back to your bicycle every time something goes wrong". I stuck at using the system and I lost time. I realised that it was part of the price I had to pay. I knew I was losing time, but I was getting hold of a tool that was going to be so useful that it was worth it.

'I now realise that I was right to persevere. After six months the impact has been absolutely tremendous. My particular way of working, which I think a lot of writers share, used to be to write everything first in very small longhand so that if I had to shift about sentences or chunks of material I could use arrows to show where text should be moved to. Then I would type that out on my typewriter, correcting it as I went along. This meant that by the time I had my finished typescript I had a corrected manuscript. But the first jigging about was all done in longhand and the paper was covered in arrows and brackets – 1As and 1Bs and "refer to back page" and "insert" and so on.

'It seemed to me when I read about word processors that this is what they were invented to do and when I started to use WordStar I found that it was so. Now I do everything I used to do with longhand and the typewriter straight onto the screen.

'There are times when I still pick up a pencil and paper. I think it's a question of what has started to make your creative juices flow up to this point in your life. E. M. Forster always said it was the scratching of the pencil on the paper. Somerset Maugham always used to write ten minutes of rubbish every morning before the real thing started to flow. It's the trick you use to get the words flowing, and if you find yourself with a knot, you instinctively, like a baby, go back to your soother – which for me is a pencil. I still swing round in the old chair, grab the clipboard and say to myself "this is the way it used to work for me, let's see if it still does?"

'Word processing has improved my output tremendously. I would put an astonishing figure on it; I'd say my production is improved by 400 per cent. I'd also say it has improved the quality. As well as increasing my speed, it's also increased my confidence. I'm frightened to experiment and get a whole passage wrong. I know I can wipe it out or alter it without making a new draft. In that sense it's greatly increased my confidence and I'm more willing to take chances. I'm not going so far as to play with individual words. If anything, writing with a mechanical device rather than with a pen, one tends to be less precious. I find the dialogue more spare with word processing than in longhand.

'I'm playing with paragraphs more than I used to. When I read a paragraph back, or a screen page back, I think, "no, there could be a better rhythm there if I could just stick in a something or a something". I'm more willing to do that now

whereas with my typewriter, I used to think "no way, that's very tidy. It's good and clean, I'm not going to mess about with it". Fatigue steps in.

'It is harder to use word processing for scripts than for novels: there is more manipulation of the controls to do. When you're writing a film script you've got the stage direction line that runs right across the page, then you have to centre the name of the character and the dialogue has to be centred around the name of the character and so on. In order to do that I have to press about three controls when I switch from one mode to another.

'I find the facility that lets me automatically replace words very useful. I changed a character's name in a novel I've just finished. I realised that the two names put together, the Christian name and the surname, made a character seem very like a friend of mine, whom I did not want to offend. I asked the system to find all the occurrences of the name in the text and change them. One quite often names a character wrongly; you don't call a timid man Bullock, do you? But if you're short of a name and in a hurry you might whack anything in. When you read it, you think no, that's wrong, and use the computer to change it.

'I haven't used my computer for research and I very much want to. I wish I'd had the facility when I was writing *Number 10*. The research on that was horrendous. It must be a revelation to plug into a library.

'Word processing is still a novelty for me. I'm still at the point where I feel it is a bit of a toy, the same way you feel about a new car. It's taken a little bit off the edge of the feeling: "Oh Christ, it's work again".

'It gives me a buzz every time I start. I think my wife might cite my machine in a divorce as I've called it Sophie. Computers all seem to be so male and macho, especially when they keep saying "WHAT?" "WHAT?" It annoys the hell out of me so I thought I'd make my machine female.

'I have lost some work with my system, of course. We had a fuse that affected the plug to which the thing was attached and I lost 25 pages of my novel. I had nothing. It was my own fault I'd been told never to do more than 10 pages without printing it out or backing it up. I didn't feel I could bring myself to re-write that. I thought, "I can't do it. I've done it once".

'I did blow another couple of disks myself by switching the system on after I'd put the disks in. They just kept coming up with

"Disk Error". Losing work is the most frustrating thing about word processing.

'I take a paper copy of my work every day now – well up to this week I have. This week I'm trying to be brave. I'm working from a book so it's not quite so critical I'm breaking down a book into what the Americans call a bible (a scene by scene breakdown) I thought, "I've got to have faith".

'Disks failing do worry me, however. In the old days you always had something when your typewriter broke down. The words weren't locked up in some confounded electronic brain However, I am going to try and get 45 pages onto a disk without printing. If I can do that I'll have cracked my inhibition.

'I put one extra vertical space in between my lines – I really do a space and a half and I get an average of 50 pages a disk – it ranges between 45 and 54 pages per eight inch disk.

'I've had problems trying to overfill disks. Now I check every half hour to see how much disk space I've got left. I also ran into a problem once because of disk error. It told me that I'd used 76 per cent of the disk. I carried on as I reckon to use about 80 or 85 per cent, to allow space for editing. Then I was told "disk full" and I lost the last four pages.

'I managed to cure another little problem myself, by learning the way Sophie thinks. WordStar have not programmed that software to put a '1' on the first page. It prints the first page without a number and puts 2 on the second page. Rank Xerox told me that this is because the program is mostly used for writing reports in which the first page is used as a cover. Actually, I'm sure it's a bug in the program. What I do is write a sentence of rubbish and it calls that page one, then I start properly on page two.

'I use continuous form stationery on a tractor feed. The tractor paper has holes on the side and at first I thought that people might be a bit thrown by receiving material on that kind of paper. In fact they don't even seem to notice. It's a letter quality printer and it has a beautiful type-face.

'I don't use the spelling and hyphenation dictionary. I happen to be a jolly good speller, and always have been, and I find the dictionary provided with WordStar pathetic. It is only 10,000 words long and it kept throwing every word up as being wrong. In any case I don't need it.

'I do use it for counting my wordage at the end of the day – that's very useful. I always found word counting a chore.

'One thing I have noticed since I started using Sophie is slight headaches. I've never suffered from headaches, but I'm now suffering from maybe one a week. I just wonder whether I've got the screen brightness too high.'

Tom Sharpe Since his first best-seller, *Wilt*, Tom Sharpe has concentrated on writing novels he describes as being farce. Although he cheerfully admits to being a 'gadget freak' and at home with things technical, his experiences with word processing on a Commodore Pet 8032 with an 80 column screen haven't been entirely happy. What follows is *two* interviews conducted with Tom at an interval of six weeks. At the time of the first interview he had 'given up' word processing for writing fiction because of the many frustrations he had suffered. Six weeks later he contacted me to tell me he had 're-discovered' word processing. He now uses word processing for the majority of his fiction writing and these two interviews should be read as his 'before and after' views on the subject. He is now considering buying an IBM PC and 'WordStar', but he still feels there is 'something wrong' with using word processing; he feels it is all too easy.

Interview One: 'Before'

'I first got a word processor in April 1982 and since then I've bought another two. I looked at a friend's Commodore Pet along the road which was running WordPro and I decided to get a system myself. I've now given up using word processing for my fiction writing, however, although it's marvellous for letters. I found that I was concentrating more on the word processing than on my writing.

'I've got an obsession about a clean top copy, that was my main reason for getting a system. There was also the editing power, of course. I'm so fanatical about getting things right I go through wodges of paper. If I don't get something right on the page, then it just gets ripped off the typewriter and goes in the bin. I suppose I make enough money to waste the paper. Up until this week I was even using the other side of the paper.

'I think that obsession started when I first started writing, or at least when I first started getting published; you had to turn in three clean top copies and it was beyond my typing ability to do that. In those days it cost about seventy-six quid for a professional typist to type the manuscript. During that time my handwritten manu-

script was out of my control. It might have been lost, anything might have happened; the usual Carlyle thing.

'The first book I ever wrote was written in longhand. From there I went to typewriters and then on to electric typewriters. I wasn't a bad typist. I'd always used a typewriter ever since I'd been an undergraduate, but I've never learned to type properly – I still can't use my little finger on an A. I'm also a puncher on the keyboard, a hard hitter. I make far fewer mistakes on a less sensitive machine. Even if you've got a self-corrector, you've still got to go back, so I'd rather belt it out on my old manual at the moment.

'I now use an Adler Gabrielle 10, which they don't make any more. There isn't an awful lot you can do with that machine. You can type a line on it and you can backspace and you can adjust the margin and that's the limit of the correctability. Otherwise you've got to use a pen. As soon as I moved onto a golfball I realised I could use half spaces and all sorts of extra things. Self correctors are marvellous, of course, but I think that superstition about using a certain machine comes into it.

'I gave this Gabrielle to my brother-in-law – he lives in America. When I was in America this summer I borrowed it for a while and since I'd written *Wilt* on it, I decided to bring it back with me ("thank you very much!") and I've been using it ever since.

'I still write a lot in longhand. I've always used longhand, it has to do with tone. I started a book I was calling "Town" on my Commodore word processing system and that book never took off because the tone wasn't right. Now, I can't tell you what tone is, but I just know when I've got it. I got it in *Wilt* and I got it in *The Wilt Alternative*, up to about half way through. Then I lost it. If you've got to produce a book, you produce a book. Once you've got the tone right, then the book will run.

'I find that using a pen is the best way of getting that tone. The less you're conscious of your writing, the better. The more you're concentrating on the matter rather than the way of doing it, the better you're likely to write.

'One of the reasons I turned from the pen to the typewriter wasn't just the question of getting lots of copies, I found I was also too concerned with my handwriting. It has been practised since I was a kid; I used to copy my father's hand. I found that it was getting in my way, I was thinking more about how my handwriting looked than about my writing. I suppose the visual person in me

was colliding with the person who wanted to write. With the typewriter you're halfway to a printed page, so that was one of the reasons why I went onto a typewriter for my second book.

'I keep going back and writing ten or fifteen pages in longhand, just to get a book going with the right tone. My problem with word processing is not that I feel the system is a barrier, rather it's the other way round. Because the words are on a screen and can be easily edited, I put a damn sight more words onto it with a damn sight less care. That's terrible because the words don't seem to matter. They're on a screen; it's not even on a piece of paper. It's not an object, you see, it's simply an image and as a result you can have verbal diarrhoea on the machine and it doesn't make the slightest bit of difference. For me, that's bad writing.

'I do most of my editing mentally, before I put the words down, then it's edited again. That's why I keep tearing sheets of paper up, because I'm not satisfied. Although it's an easy process on the screen, paper is still an object. With a screen, you switch it off, it's all gone. I've still got my bits of paper until I get up to throw them away.

'It may be that my style isn't suitable for word processing. I'm writing farce. People always think that farce is simply plot and action, but it's not. It's the way you put words, it's the parenthesis, it's the qualification you make to what somebody says. I use far too many adverbs. I use them deliberately, I know what I'm doing to that extent: "He said, lividly." That's ridiculous, but it works for me. It has the effect of providing that comment. It's not what the character said, it's what he's thinking. Simple adverbs is an easy example.

'At times I work very quickly and I haven't found that possible with the screen. It has something to do with the size of the screen. It's become something of a habit with me to use quarto size paper and I haven't got a quarto screen on my word processor, of course. The screen is rather peculiar and I don't think it is easy to read. Even if you reverse the way it works and have back projection of black lettering on a white screen I should imagine the eye-strain must be colossal.

'I think that that bloody cursor blinking at me on the word processor screen is awful. I mean, it's blink, blink, blink – well, screw this bastard, it's telling me to get on! All I know is that my personal experience with word processing has not been good.

'I found it very hard to get to grips with the word processing

program I was using. MicroScript had only just come out and so I didn't have the full directions. I went dotty trying to make the thing work. There wasn't a manual and it nearly drove me mad. My introduction to word processing was catastrophic. It took me three or four months to get used to the bloody thing and by that time I was no longer interested. However, I still thought I was going to write the next book on it. I tried to work on that system alone, not using longhand or anything else, but I found that I didn't like what I was writing.

'It wasn't just dissatisfaction with my work. Once the thing crashed. There was a fluctuation in the voltage and because I hadn't saved about three or four pages they were lost. It was a disaster. I find that whenever I use the system I'm obsessive about saving text and that gets in the way of my writing. Losing my pages was a traumatic experience. I hated saving. I suppose if I had an automatic "save" feature it would be alright. Now I always copy disks before I break for lunch when I am using the system.

'I can't blame my own word processing system for this as I don't have anything to compare it to, but I suppose I do blame word processing itself. I don't know if that's fair since I've never tried any other system. At this moment I've rejected word processing for fiction writing. I like to use it for writing letters but in a funny way, the very fact that you've written a letter and it's on disk means that you don't have to send the damn thing . . . I think writers are nutty anyway. It's almost the opposite psychology involved to the idea of saying, "write it on paper because there it is". For me, write it onto disks means, "there it isn't!" It's there, but you don't have to send it. An electronic memory of text seems like a less substantial thing A piece of paper, on the other hand, is substantial. You can hold it, touch it, and when you've written a lot of words on paper you feel by God you've done something. With a word processor and a disk, well . . . You can't read a fucking disk!

'I have done 76 pages of a book on my system, but I've discarded them. I made a compromise decision when I bought the thing; I wanted a computer and I also wanted a word processor and it seems to me that if you are going to buy something to work on, you shouldn't play it that way. If you're a computer buff you can make a decision to go onto word processing from computing, but if you're not a computer buff go straight to a dedicated word processor; spend the extra money.

'Another problem I had with my system was the bloody spacing.

I suppose I am a bit obsessional about the copy, although I don't go as far as justified margins, but I found there were gaps appearing in my printing and I couldn't find out what caused them. To find these gaps I had to go to "view" and then I had to work through it for hours trying to find each gap before printing. I don't like my dot matrix printer either.

'All I really managed with word processing was to increase my work load. I spent more time thinking about my word processor than the words I was writing. Writers who are frightened of it are right to be so. I enjoy writing letters on the system, though. Writing fiction is hard work, but I enjoy writing letters in the evening on the word processor.

'One aspect of word processing I did like was the ability to get the computer to alter character names for me, the problem is that on my system you have to tell it to do each one separately. I think you should just be able to tell it to find all the "Wilts" and alter them.

'I hoped that word processing would remove some of the fatigue of writing. I think about words enormously. It may not be apparent in the writing, but I spend a hell of a lot of time looking things up in dictionaries, trying to get exactly the right word. I go over and over my words carefully and although the reader may not be conscious of this he's influenced by all the effort that's gone into a sentence.

'Word processing didn't help with this work because I had to go back over the words and the spacing went to hell. I've spent so much of my time mucking about inserting and deleting, it's very tiresome. I suppose it might be my system, although to be fair to it I'm one of those people who learn by doing rather than by reading manuals, although it's an awful manual.

'At the moment, word processing has no place in my work. I've never talked with publishers about giving them disks although it will obviously come.'

Interview Two: 'After'

'Well, I've changed my mind about word processing completely. I decided to go back to my system and have another go at getting to grips with it and I haven't stopped since. It's changed my life.

'I got down to it and tried learning my word processor from scratch and this time it all seemed to work. It's marvellous. There's a cartoon inside a magazine in our lavatory and one bloke is saying

to the other, "I bought the second computer to explain the first one's manual". I reckon that about sums it up. I think people should get training with word processing, I realise that it would have helped me.

'I thought I ought to admit to being wrong about word processing to be fair to the manufacturers of my system. I've discovered that you can change any word in the text automatically and all sorts of things are much easier than I thought.

'I'm now writing on the system all the time. My wife noticed it first, but I find that the copy I'm producing is better at the first draft, it's closer to the final thing. I find that it also helps me through the blank spots. When I'm having trouble with a section I can scroll back through my previous words and tinker with them. That helps me get the tone back and to carry on.

'I go down to my hut every day, I read through what I've written the day before on the screen and alter a few words, those I feel need altering, and in those moments of blankness, when I'd otherwise be chewing a pencil, I can actually be working away at other things; re-reading the thing and saying, "hang on, let's change this". It gets me over the blank spots.

'What I'm pissed off about really is that you can't swop systems around. I still don't like my screen, but that's Commodore for you. I'm thinking about getting an IBM now with WordStar, but I'm told that learning WordStar is a bit of a bastard. Mind you, I think that once you've learned one word processing program, learning another is a damn sight easier. You understand the principles and you understand the language a bit better.

'I have some worries about word processing; I can't stop! I'm frightened I'm overwriting, but I'll have to wait and see. It seems too easy, somehow.'

Len Deighton Len Deighton was the first popular fiction writer in the world to use a word processor. Today he's on his third system, an Olivetti ES-10, and anticipating a switch to a 16-bit machine with hard disk. His latest works are in a trilogy gathered under the generic heading of *Game, Set & Match*. The first two books were *Berlin Game* and *Mexico Set*.

'I first had a word processor in 1968. It was an IBM system and it worked on two tapes. One tape supplied the words you had typed and as you made your corrections that was transferred along with

the corrections onto the other tape. It had no screen, of course, and there were dials on it which you had to set to tell it to supply a paragraph or a line. It wasn't terribly big, not much bigger than a large sewing machine, I suppose.

'At that time I lived at the Elephant and Castle in London and a local IBM rep took me to show me their word processing machines working at the Shell office. I decided to lease one from IBM. I remember they were £4,000 to buy, which in 1968 terms was a hell of a lot of money. My accountant advised me to lease one rather than buy as he felt that the machines would go out of date quickly. The problem was that I had to buy the tapes to use on the machine and because I did a long book on it – that was *Bomber* – I've still got a whole cupboard full of these incredibly expensive, but now useless tapes. *Bomber* was a very good book to do on the word processor because there was a lot of cross-referencing as the story took place in England, Germany and in Holland.

'The first machine was very hard to use, in fact I carried on using my golfball typewriter even after it was installed. It was nearly always my secretary who used that machine and we did have a lot of teething troubles with it. I wasn't any sort of computer expert and I'm not very good at it now.

'I've come across quite a lot of Luddite reaction to the subject. In the journal of the American Authors' Guild there was some correspondence that was so comical. Some guy wrote a piece saying how useful he had found word processing and in the course of saying this he mentioned how useful it was to do magazine articles. The response from a lot of writers was, "Well, of course, this is all right for journalists, but serious writers won't want it."

'There's a lack of self-confidence in all writers, they're all afraid they'll dry up and this stops many established writers from changing their tried and tested methods of writing. I've read somewhere that Simenon has to have twelve ready-sharpened pencils by the pad before he can start; all that crap.

'When I moved to Ireland the IBM was still being serviced every week and so I jacked it in. I did what everyone did, I suppose, before I switched to a proper word processor. I held off, thinking, "well, next week they're going to have a breakthrough and they're going to be a lot cheaper".

'I went to see Richard Condon about 1979 and he told me that it was ridiculous that I wasn't using a word processor. My worry was that I was living in Ireland and I was concerned about servicing,

but he showed me the system that he was planning to take to America with him. I liked it, so I offered to buy it from him to save him taking it over there and changing the voltage, and so on. He'd already done two or three books on that system and I did a book on it. That system was called a TES-501.

'I had a break from word processing for a while. *SS-GB*, which I wrote six or seven years ago, I did on the cheapest manual typewriter. I went to Italy for a couple of months thinking that as it was the home of typewriters I should be able to buy a small electric portable. As it turned out, I could only find huge electric machines or small manual portables, and as I wanted to go to Ravenna and Venice and work on the way I bought a little manual portable and banged it out on that. My fingers swelled up and went red. It had been ten years since I'd used a manual. I suppose there was a certain sort of Calvinist attitude in that, and now I live and pray for the day when word processors are small enough to carry around.

'I've been locked up here at home all on my own while my family have been away just because I just have to be with this monster word processor. I have now become quite reliant on it; it's the greatest bug there is. I think the answer to that is going to be one of the new portable word processors. I'm looking into that now and if I can get a portable to interface properly with my main system, I'll be able to work almost anywhere.

'I took this one from Richard Condon. It didn't have a screen and I found that to be absolutely wonderful. I think that once you've got a screen the idea of using a machine without a screen sounds appalling but to someone who is thinking of buying a machine and for cost reasons couldn't afford a screen, I would recommend it. You can only edit fifteen lines at a time, but it does take big floppy disks which hold a lot of data. The paper becomes the screen In fact it's not like working without a screen because you can see the stuff coming out on the paper. I'm still happy working without a screen, really, I do notice I get more tired when I'm using a screen. Because that machine has certain things on it, I won't get rid of it, even though I now use a newer word processor for most of my writing. For example all my addresses; the machine provides a four digit code for everything I store and whenever I punch that code it goes and finds that bit of text. It's wonderful for addresses because it will store them all and I can address an envelope by pressing four digits. On my Olivetti ETS 1010 it would

take me fifteen minutes – booting it, taking my automatic sheet feed off my printer and so on.

'I went to Rank Xerox and also to quite a few other makers and asked them to show me a system which could address an envelope in that way. The only people who claimed they could do it instantly were Wordplex. These other people all admitted it was a long procedure with their systems.

'I use a cut-sheet feeder on my printer so I don't have to keep feeding it with sheets of paper. I had an enormous amount of trouble with the feeder and it took the engineers six months to cure it. Since they've cured the problems, however, I've never had any trouble and I now go into town leaving it going. On the other hand I wouldn't put it in the back of the car and take it somewhere, I'm sure that would disturb it. It's also very slow. About twenty years ago I used to use fan-fold paper in three-ply sheets which were automatic no-carbon copies and getting two copies in that way was very good.

'I think that word processing has had a definite effect on my writing style, I think it has improved it immensely. I put something up on the screen and I'll leave it there and then have a look at it later and maybe revise that two or three times before I do even the first print out. When I was writing *Bomber* on this old IBM it was necessary to keep a careful note every time the tapes were revised; it really was a tremendous labour. Everything had to be written down, but because my secretary had written everything down she asked me if I would like to know how many times I had revised a chapter. It had been revised twenty-five times.

'I think I now get the equivalent of that out of four print outs, instead of someone typing it out twenty-five times. By the time I've printed it out four times, I've arrived at the same point. You put the words down, and as soon as they're down, you've seen some things that are wrong with them and you start putting the obvious faults right. Then you fiddle with it and by the time that thing's been on the screen for five minutes it's into its third or fourth revision. This would be impossible by any other means. There is an inhibition about making your typist re-type things because you feel guilty that you're giving her so much work.

'There's also a spatial element; if you have a page of double-spaced typing you will revise it up to the point where there's no room for revising. When the new sheet comes out re-typed it looks so good you don't want to alter it. Both of those things are bad.

There are sheets where I've done the changes by hand and I could really have improved it very, very much more but for the fact that by that time the whole margin was full of changes and every other space was full and I just couldn't go on. The liberation from that is staggering.

'I have lost words with my machines. I used to get lots and lots of power cuts here in Ireland, but I haven't had any just recently and I think the electric company may have found the fault that was causing the problem.

'On my present system I only had sixteen lines at risk at any one time, the rest of the material is automatically stored on disk. But it could be a drag if those sixteen lines consisted of changes to a chapter. I finally got onto Olivetti and bullied them and made myself a nuisance until they came and put in a "BOP" – a Brown Out Protection. It's a nickel cadmium battery. If I switch off all the power now, it will just jump whatever's in the memory onto disk. The program automatically saves everything to disk by the formula of sixteen lines or ten minutes.

'I did have disk problems on the older machine and I now carefully keep duplicates. I think this is going to change, I can't believe that we're going to go on with these floppy disks for very much longer. It's going to go to Winchesters (hard disks) and that's what I would like. Among the reasons I'd like it is for its storage power. I'm writing a trilogy at present with the same people running through all three books. Every time there's a description of someone in a chapter, I bring that description out of a document I've created which is like a back-up book. That file's now fifty pages long.

'This document holds cross-reference information on every person and on every room in which they might find themselves. Because of this I need a lot of movement from disk to disk – especially as there's a back-up kept for every one. If I had a Winchester disk, I wouldn't have to keep on putting disks into the drives and taking them out. I've got a time scale so that I know when everyone was born, when their children were born and so on. I also have a continuity system for each character. For example, one of the last things a character might be doing in one book is thinking of buying a new car. When I'm working on my next book, my continuation paragraph allows me to look him up to see immediately what he was doing when the reader last encountered him.

'I have a format for each character's continuation file which is in the form of a questionnaire. It asks: "How tall are you? How short are you? What colour of eyes? What school? What work?" and all that kind of thing. Now I paste that so that on every one of these pages I've got a set of questions which at some time during the work I will be able to answer. I'm so pleased that I began doing that with the first book in the trilogy because if I were starting it now the task would be overwhelming.

'Word processors aren't designed for writers, however. Everything about the program on my Olivetti tells me that this guy who created it has never ever sat down and written a long piece of text. My son came up to me – he's only ten – and he said, "Wouldn't it be a good idea if you had a button so that when you press it, a full stop appears, the spaces are made and the next letter is automatically capitalised?" Of course, I thought the idea was fantastic.

'They've now sent me a thing and I can program keys to do things like that, but it's got warnings all over it, saying be cautious when you're doing it, and it's frightened me off. The idea of being able to do that sort of thing is very useful, but it has to be easy.

'The way things are going, I'm sure that dedicated machines will eventually disappear and I'm certainly looking forward to getting a system that will store whole chapters and my research in live memory. I'm also looking forward to getting my portable I'm very excited about that!'

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